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SETTLEMENTS IN THE YAMUNA-HINDON DOAB

An Archaeological Perspective

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Rewant Vikram Singh

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गुरुकुल कांगड़ी विश्वविद्यालय
कृपया पुस्तक के ऊपर कोई निशान आदि
न लगायें।

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पुस्तकालय
गुरुकुल कांगड़ी विश्वविद्यालय, हरिद्वार

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वर्ग संख्या ....
आगत संख्या...........

पुस्तक विवरण की तिथि नीचे अंकित है। इस तिथि सहित ३० वें दिन यह पुस्तक पुस्तकालय में वापस आ जानी चाहिए। अन्यथा ५० पैसे प्रति दिन के हिसाब से विलम्ब दण्ड लगेगा।

Settlements
in
The Yamuna-Hindon Doab
An Archaeological Perspective

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गुरुकुल कांगड़ी विश्वविद्यालय

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PREFACE

The present work is an attempt to comprehend the settlement history of the Yamuna-Hindon doab by studying the doab lying between the Baghpat-Meerut Road and the Delhi-Ghaziabad highway. A village-to-village survey, both along the river-banks and away from the same has been undertaken. While the main focus is on the settlement pattern of this micro area, a comprehensive macro study of the Yamuna-Hindon doab has been done that would allow generalization of the entire doab. The emphasis is more on a study of the protohistoric and early historic cultures of the region, as very little of these periods has come to us through literary sources. Nevertheless, the later periods of history were also not at all ignored. The issues of the cultural continuity and discontinuity till the medieval period have been analysed, and besides a large number of ancient sites, an equally significant number of medieval sites have been discussed.

The methodology chosen for this work involves analyses of the archaeological data in the context of ecological factors and the technology available during various cultural periods. It is also based on exploration on a limited scale and the record of surface findings. The story, legends, myths and statements were collected by me during the field work in February-March 1999, October-November 2000 and again in February-March 2001. The recovery of the past through this methodology is also important because it intends to bring to notice the important archaeological sites that we might lose for always due to increasing population pressure in the area for new settlements and extension of agricultural lands, and mass urbanization, leading to large-scale destruction of archaeological sites. It is intended that an analysis of these sites would help the stream of archaeology and history in a constructive manner.

The preparation of this work owes innumerable debts of gratitude to my supervisor Dr. Nayanjot Lahiri. It is she who taught me the concept of archaeology and archaeological research and constantly encouraged me to take up the challenges of the field research. The discussions with her were always illuminating which broadened my horizon of thinking on the subject.

I am thankful to Mr. D. K. Malik and S. P. Verma of the ASI for making the diagrams of the potteries.

I owe personal debt to the villagers of the area who were very helpful and acted as local guides. I can never forget the information and help provided by Mr. Manoj Kumar Tyagi of Mandaula village, and in particular Mr. Dev Sharma of Mukari, who not only helped me in fixing my motorcycle when it stopped functioning but also did not allow me to come back to Delhi as it was too late in the night and forced me to stay back at his house. I am glad that this field research provided me an opportunity to understand and interact with the rural India. Last but not the least, I can never forget my family, my parents who put all their limited resources at their disposal to finish this work, my sister, Poonam

Singh, and elder brother, Skand Vikram Singh, who are, and will always remain the role models for me, my younger brothers, Indra Vikram Singh and Surya Vikram Singh, whose expectations from me have always given me the strength and the direction to deliver my best.

All these people deserve every credit of the work except the faults that are obviously mine.

January 26, 2003
New Delhi

Rewant Vikram Singh

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1

INTRODUCTION

I. THE PROBLEM

This work proposes to study the settlement pattern of a part of the Yamuna-Hindon doab*, *i.e.* the Yamuna-Hindon doab lying between the Baghpat-Meerut Road and the Delhi-Ghaziabad highway. The extremities of the area are marked by the parallels of approximately 28° 40′ and 28° 58′ north latitude and 77°13′ and 77° 28′ east longitude. In the Indian Subcontinent, the Yamuna-Hindon doab, as a part of the larger Ganga-Yamuna doab occupies a significant place right from the ancient times. The doab and its neighbourhood are already well known for possessing a significant number of Late Harappan, PGW, NBP, early historic, Gupta, Post-Gupta and Medieval sites.

In the literary sources, the earliest references from the Yamuna-Hindon doab is to be found in the famous Epic, the *Mahabharata*. B. B. Lal has identified several sites that have been referred in the *Mahabharata* in *Ancient India, Vol. 10 & 11, 1954-55*. However, in the literary sources, there is almost no reference of the social, economic, and political development in the area during the period before the legend of *Mahabharata* war. It has to be noted that the historicity of the *Mahabharata* war is itself controversial. Again, there is no reference of the developments during the centuries between the *Mahabharata* war and the settlement of Tomars in Delhi. Moreover, the ancient literary sources are religious in nature, engulfed with mythologies, while the dates of many literary sources are uncertain and disputed.

In such a background of paucity of references in the literary sources, an archaeological study of the Yamuna-Hindon doab occupies a significant place. The monuments, structures, and other artifacts or remains of the past that would reflect the history of the Yamuna-Hindon doab lie mostly covered by the soil and wreckage. We have lost most of these remains of the past forever due to massive scale of urbanisation that has taken place in the area. Pressed by the demands of rapidly increasing population, the sites, the mounds, and the structural remains were destroyed to clear land for shelter and for agricultural produce. However, at times this process of urbanization also brought into light, from the concealed layers of accumulated soil and debris, remains of the past. Wherever the sites have not been destroyed by activities such as the construction of roads, houses, and factories or farming one can still notice mounds that show their occupations over centuries. And whenever, some of these mounds are disturbed or cut away, such as when someone decides to install a handpump or build a house or a well or to level the ground to grow crops on, the remains of the past are exposed. We can notice most of these sites in the rural areas. This was one of the causes for my taking up the Yamuna-Hindon doab as the study area because much of this area is still rural and the process of urbanisation has not yet destroyed some of these sites. However, the urbanization is gradually penetrating this area day-by-day and we are losing these sites and with them the remains of the past are also lost forever. Consequently, over a period of time it is feared that we might have very little of the past in this area. This is particularly true of the ancient past, as the sites of the medieval period in most cases are continued to be occupied till date, while most of the deserted ancient sites have been destroyed.

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* Persian word meaning "the country between two waters (rivers)".

The second factor for taking up the Yamuna-Hindon doab as the study area was identification of significant number of Late Harappans, PGW, NBP, and early historic, Gupta, post-Gupta and Medieval sites in the region. Most of the identified sites are in the Saharanpur, Muzaffarnagar, Ghaziabad and Meerut districts of Uttar Pradesh, and east Delhi. I have taken up the study of settlement history of a micro area from the region. The micro study covers the doab below the Baghpat-Meerut Road and the Delhi-Ghaziabad highway. The significance of the area is highlightened by the identification of Baghpat, Loni, Kaseri and Mandoli as the sites of ancient past. This suggested that there might be some other sites of ancient past in the area that have not yet been identified. The possibility of locating unidentified sites in the area was further strengthened by the fact that people in their struggle for existence, within any region, will tend to settle down in places that are close to sources of water and food, and as far as possible, that are safe and pleasant. The Yamuna-Hindon doab was a right place in this context. Though there are exceptions to such generalizations.

Another factor that encouraged undertaking a study of settlement history of the Yamuna-Hindon doab was that because of the lack of horizontal excavations in the region, including the Yamuna-Hindon doab area, we do not have a clear picture of the pattern of distribution, spacing of settlements in different cultural periods and the role of ecological factors in shaping these aspects of cultures. Other aspects like the changes in the settlement patterns due to change in the population density, technology and exploitation of economic resources also remain unknown. However, some systematic surveys and explorations conducted in the region and the conclusions drawn showed that even in the absence of horizontal excavations there is ample evidence for us to study the settlement pattern of the Yamuna-Hindon doab, which has still not seen the massive urbanization as experienced by Delhi.

With this background one realizes that in archaeology, the study of settlement pattern can perhaps fill some of the gaps that we face in the reconstruction of the past, particularly ancient past, created by the absence of horizontal excavations.

The concept of settlement pattern is basically derived from the geography. Makkhan Lal has pointed out that:

"The settlement pattern studies by and large have revolved around the tradition initiated by Gordon R. Willey. The emphasis is one extensive regional survey, within regions of several hundreds to several thousands sq. km. In order to define the extent of the system, delineate the broad problems like migration and diffusion, and formulate hypotheses regarding site function, demography and polity, which can be tested and redefined through subsequent intensified investigations. Inferences have been mainly drawn from the gross outlines of settlement configuration, from surface indications of different architectural complexity within and between sites, from site locations with features and form the changes in these variables through time."

The settlement pattern studies also involves finding out the manner in which human settlement are arranged over the landscape in relation to the physiographic, geographic, and environment (Chang 1958). Makkhan Lal (1984) and A.B. Paul (1999-2000) show how over a period of time settlement pattern studies have further developed (Adams 1961, 1965, Chang 1962, Sanders 1965, Trigger 1968, Flamming 1971, Flannery 1972, Renfrew 1972, Clark 1972).

Several settlement pattern studies have been undertaken in Europe, America, and the Middle East. In India too, several significant studies on the settlement pattern have been undertaken

(Dhavalikar and Possehl 1974; Bhan 1979; Possehl 1980; Paddayya 1982; Makkhan Lal 1984; Erodsy 1988; Paul 1999-2000).

In the present work, an extensive survey of the identified micro region of the Yamuna-Hindon doab has been taken up in an attempt to study the settlement pattern of this region. Further, due to feasibility factor, in the present work more emphasis is on a comparatively study of the protohistoric and early historic cultures *i.e.* the period from 1800 B.C. (late Harappan) to 300 A.D. (early historic). Though, an analysis of the sites possessing cultural remains of the Gupta, post-Gupta and medieval periods were also not subjected to negligence. However, the study of this period of history is brief.

There are several limitations in this kind of work, as the hypotheses given are not absolute as they are not based on extensive horizontal excavations and the element of probability is always there. Nevertheless, as Makkhan Lal (1984 : 3) has aptly said:

"...... such exercises have to be undertaken if we are to progress beyond a knowledge of material culture to the process underlying cultural change."

II. SCOPE OF THE WORK

The work has been divided into six chapters. Chapter one provides an introductory background to the work.

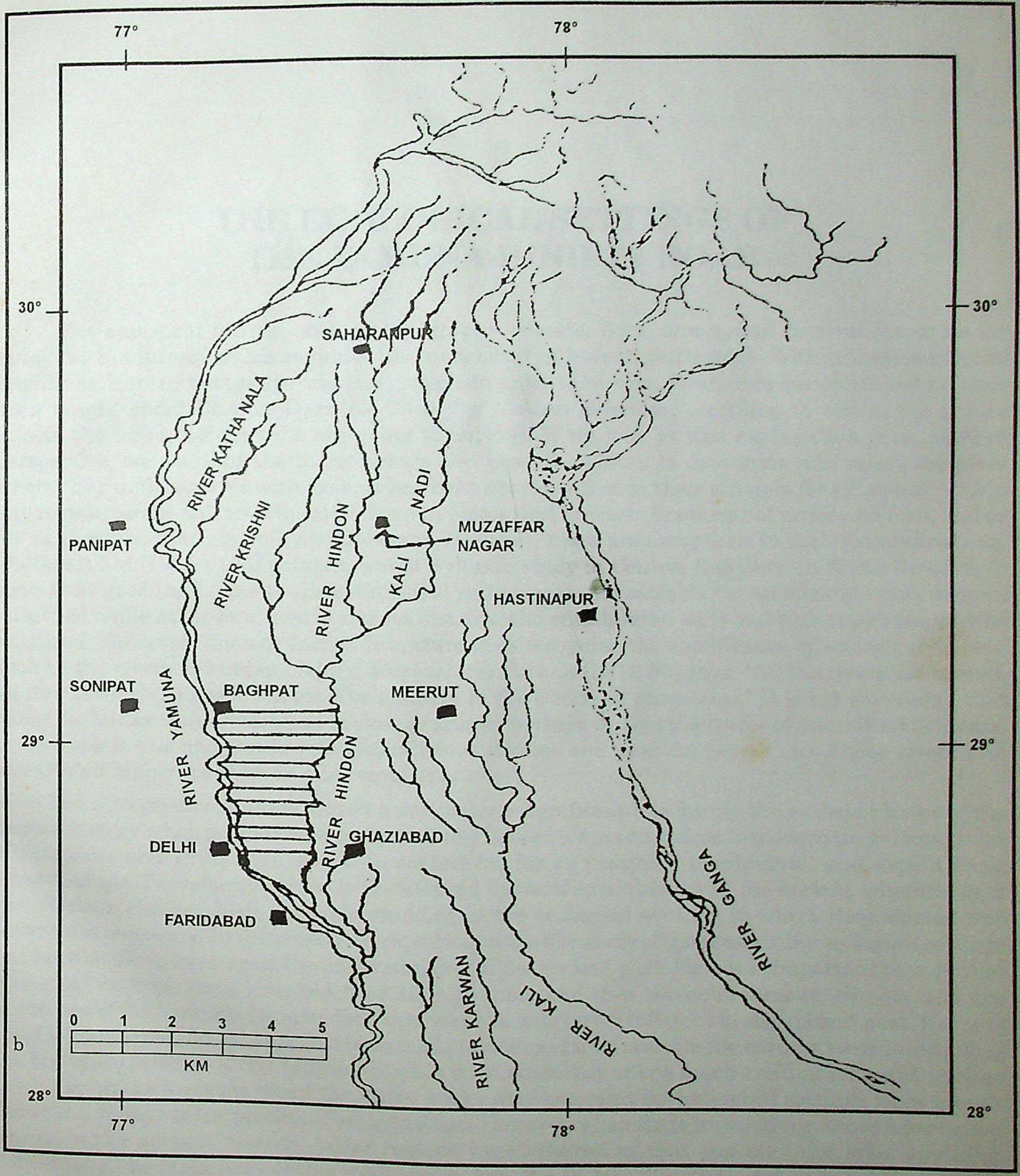
Chapter two, 'The Ecological Settings of the Yamuna-Hindon Doab', is concerned with the geographical features and characters that are important and desirable since this is a work on settlement pattern, which has been derived from the concept of geography and ecology. It is underlined here that although the Yamuna-Hindon doab is a part of the larger Ganga-Yamuna doab, it has, nevertheless developed its peculiar geographical features and has an important bearing on the settlement pattern of the region. In addition, an historical outline of the Yamuna-Hindon doab has been provided that would help in our understanding of the socio-political factors affecting the settlement pattern.

Chapter three, 'A Survey of Archaeological Research in the Yamuna-Hindon Doab', presents a critical summary of the past works on the history of archaeology in the Yamuna-Hindon doab. As will be evident, this is not different from the manner in which the pattern of archaeological research in other areas has been followed. Consequently, the problems associated with the pan-India level were also present within the Yamuna-Hindon doab. In this chapter, it is also pointed out that while in the upper Yamuna-Hindon doab there has been significant exploration and excavation works, the micro region identified here remained much less studied.

Chapter four, 'Yamuna-Hindon Doab – A Micro Settlement Assessment' is the core chapter based on a field survey conducted by me during February-March 1999, October-November 2000 and again in February-March 2001. An intensive village-to-village survey was carried out to identify new sites. During the course of explorations, utmost emphasis was laid on the location of sites and on observing the distribution and settlement pattern of the cultural elements present on them. Since there was no question of excavation, the sites were examined from identifiable and dated surface remains, particularly the ceramic remains. Towards the end of the chapter, a list of 20 Medieval sites and settlements has been provided, some of which might also contain cultural remains of the ancient past. However, only excavation could ascertain that as nothing could be said with certainty based on exploration findings. Nevertheless, these sites are important to understand the settlement pattern during the Medieval period and hence, are very significant from the point of view of archaeology and history.

Chapter five, 'Yamuna-Hindon Doab – A Macro Settlement Assessment', is an attempt to assess the settlement pattern of the Yamuna-Hindon doab on the whole mainly through the secondary sources. The Chapter has been divided into two parts. In Part I, I have studied various exploration and excavation works carried out in the area (excluding the area covered in the previous chapter on micro settlement) in and around the Yamuna-Hindon doab. The works have been studied in as much detail as possible with the available data and published material. Appendix I, lists the various sites reported in the secondary sources from the entire Yamuna-Hindon doab, mainly during explorations, covering a wide period from protohistoric to medieval times. In Part II, an attempt has been made to move in time and space both at micro and macro level and thereby presenting a broad picture of the settlement pattern of the Yamuna-Hindon doab.

Chapter six, 'Conclusions', summarises the main feature and results of the various analyses attempted in the previous chapters. In this chapter, I have offered few generalizations on the settlement pattern of the study region. It is hoped that the present study will also underline the necessity of undertaking the study of settlement pattern at micro level.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BAGHPAT
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Map 1

Location of the Yamuna-Hindon Doab
and the Field Area on the map of Uttar Pradesh, Haryana and Delhi

2

THE ECOLOGICAL SETTINGS OF THE YAMUNA-HINDON DOAB

The ecological factors, such as topography, climate, flora, fauna, and mineral resources lay down the conditions, which regulate the manoeuver of human settlement. Within these ecological conditions, human beings operate and grapple in order to survive. Ever since our childhood we have been taught about Charles Darwin's *Theory of Natural Selection*, according to which, the nature selects the living beings that are going to survive. If we look at this explanation from another perspective, we see that the living beings also have the ability to determine and select the place where they could survive with ease. It has been observed that in their struggle for existence, within any region, people will tend to settle down in places that are close to sources of water and food, and as far as possible, that are safe and pleasant. However, there are exceptions to such generalizations. Makkhan Lal (1984 : 165) points towards Bylund's study in Central Lappland in North Sweden, to show that good land close to the established settlements and suitable for colonization may remain unsettled while other localities in remote districts and with inferior soils and poor resources may be colonized. However, ancient Indian literature does recognise the significance of ecological factors, such as the rivers in human history. *Markandeya Purana* (LVII, 30) says, "All the rivers are sacred, all flow towards, the sea. All are like mothers to the world, all purge sins." It is not surprising that along the banks of the rivers and in close proximity to them we find the traces of ancient settlements, prosperous towns and fertile villages, religious shrines and peaceful hermitage. These rivers also constituted highways of trade and commerce.

The ecological conditions played a particularly significant role during the earliest phases of the human history when people had a comparatively limited (*i.e.* as compared to modern times) repertoire of resources and skills with which to control (as far as possible), manipulate, and exploit their surroundings. Therefore, in order to understand the settlement history of the ancient inhabitants of the Yamuna-Hindon doab, an understanding of the ecological settings in which they existed and survived is necessary. In the present work, a comprehensive study of the present day ecological settings has been made to bear upon the understanding of the ancient past. Here it is important to note that ecological settings have changed from time to time, and that the environment, climate and the landscape of the Yamuna-Hindon doab that we have today were different in the ancient past. Keeping this factor in mind, an attempt has been made to refer as far as possible the earliest records reflecting the ecological settings of the Yamuna-Hindon doab, since they offer a much exciting information than the latter works (because when the latter works were compiled the ecological settings were grossly disturbed, thanks to the process of urbanisation). However, when there was nothing about a particular aspect in the earliest records, latter records were referred so that one may not miss anything. Accordingly, the main body of this work comes from the *District Gazetteer of the United Provinces of Agra and Oudh, Volume IV, Gazetteer of Meerut*, 1922. The Gazetteer has taken much of the material from the *Settlement Report of the Meerut District*, by H.M.Elliot, 1862-63; the *Settlement Report of the*

District of Meerut, by Messrs., W.A. Forbes and J.S.Porter, 1874. Here it must be noted that the area explored, lying between 28° 40′ and 28° 58′ north latitude and 77°13′ and 77° 28′ east longitude, was once a part of the Meerut district. It is now that the area is distributed between Delhi (upto Patparganj, Shahadra and Nand Nagari), and the districts of Baghpat (uptill Katha and Baghpat), and Ghaziabad (uptill right bank of the Hindon).

Boundaries and Area

The Yamuna-Hindon doab forms a small part of the larger Ganga-Yamuna doab. The Yamuna-Hindon doab covers an area of about 6,500 sq. km. The doab includes the plains of Saharanpur, Muzaffarnagar, Baghpat, Ghaziabad, east Delhi and Faridabad. To the west of the doab lie the plains of Punjab, Haryana, and Delhi. To the south-west of the doab is Haryana. To its north-west lie Saharanpur. To the east of the doab lie Muzaffarnagar and Meerut. To the south-east of the doab is Bulandshahar.

B.C. Law (1967 : 13) has pointed out that according to *Kavyamimamsa* the land between the confluence of the Yamuna and the Ganges (including the Yamuna-Hindon doab) was called *Antarvedi*. Further he (1967 : 13) points out that *Taittiriya Aranyaka* (II.20) states that those who dwelt between the Ganga and the Yamuna were especially honoured.

Physical Features

The Yamuna-Hindon doab generally presents the appearance of gently inclined alluvial plains dipping towards southeast. It is extremely difficult to demarcate regional divisions in this featureless plain. The only reliefs seen are arms of river channels and existing rivers. The relief of the Yamuna-Hindon doab exhibits *Bangar* land rising upto 15-60 m above the adjoining floodplains, the *Khadar*. The streams like the Katha Nala (streams of Yamuna) and the Krishni Nadi and the Kali Nadi (streams of the Hindon) run more or less parallel to their master streams before emptying themselves into the larger rivers. The archaeological significance of these streams and their catchment areas cannot be ignored, as a large number of sites, representing cultures from protohistoric to Medieval period have been located here. In the past, these streams were the main water sources for the settlements in the areas.

Geology

The north Indian plain, of which the Yamuna-Hindon doab is a part, was a deep basin in Pre-Tertiary times that has been filled by the Tertiary rive-borne debris from the peninsular. The Upper and Post-Tertiary Himalayan debris known as alluvium later supplemented it. The deposition of alluvium started taking place during the last phase of the Siwalik formation and has continued all through the Pleistocene up to the present. The alluvial deposit is of two types: *Bangar* (older alluvium) and *Khadar* (younger alluvium). The *bangar* occupying the area above the existing flood plains (representing the present borders of the rivers) belongs to the Middle Pleistocene. *Kankar* (calcium carbonate nodules) are found in *bangar* land. The *khadar* occupies the flood plains. Its source lies partly in the fresh alluvium brought by the rivers and partly in the erosion of the *bangar* land. It is free from *kankar* and *reh* (alkaline soil).

The Drainage System

The Yamuna, the Hindon and a number of their tributaries – the Katha Nala, the Krishni and the Kali Nadi, drain the Yamuna-Hindon doab. The Yamuna rises in the Himalayas; all other rivers and streams rise in the plains. The general direction of the drainage is from north to south, and the slope is very gradual throughout. The average gradient is less than 2 feet to a mile. This restricts the erosional capacity of the rivers and the streams.

On the western part of the doab, the Yamuna, one of the perennial watercourses of north India, forms the chief drainage channel. It rises from the slopes of the Himalayas below the mount Kamet. From Saharanpur down to Faridabad, it flows southwards parallel to the Hindon until it meets the Hindon at south of Surajpur village in Haryana. Its total length is 1,357 km. The total catchment area of the Yamuna is 3,71,870 km.

The Yamuna forms the Yamuna-Hindon doab starting from the west of Jatlana, Thaneshwar, Haryana. The areas that lie in the doab region include Nakur, Saharanpur, western Deoband, Kairana, Muzaffarnagar, Budhana, Baghpat, western Sardhana, and Ghaziabad. Out of these, Nakur, Kairana, Budhana, Baghpat, and Ghaziabad lie on the left bank of the Yamuna, while the Hindon transverses through the Saharanpur city, Deoband, Muzaffarnagar, Sardhana, Baghpat, and Ghaziabad.

The Yamuna enters our surveyed area at Baghpat. It receives on its left bank the surplus water of the Eastern Yamuna canal. The *Gazetteer of Meerut* (1922 : 4-6) states that the bed of the river lies so low that irrigation from it is impracticable, and its water is only used for melons, which grow on its sandy banks. Generally, the bank is much higher in the north than in the south, and in Baghpat steep and abrupt cliffs are frequently seen. Baghpat is situated on the top of the high bank and in time of heavy flood the river approaches close to its outskirts. In May, the melting of the snow within the drainage area of the Yamuna in the Himalayas causes considerable rise in the river; the stream is then very deep and strong, but it does little damage in the northern doab (upto Baghpat), where the small area of lowland on its banks is actually benefited by the alluvial deposits brought down by the stream. Towards the end of the cold weather, owing to the amount of water that is drained out by the canals, the Yamuna is fordable and there is generally only a couple of feet of water in the bed. However, further south, the absence of high bank causes frequent overflow and saturate a great portion of Pargana Loni, although the river is kept in place to a large extent by the training works of the Agra canal.

Katha Nala

An important tributary of the Yamuna-Hindon doab is the river Katha Nala. The Katha Nala rises in Sangathera, Nakur. After traversing through Nakur, it reaches Kairana and meets the Yamuna at west of the city of Kairana. It follows a southwesterly course. The total length of the river is approximately 54 km.

Yamuna Khadir

The *Gazetteer of Meerut* (1922 : 5) informs that the Yamuna Khadir is much wider in the south than in the north. The ridge that forms the high bank of the river disappears in the south of Baghpat, or rather bend inward towards the Hindon. Here the uplands terminate in a sandy fringe of ravines and undulating soil, a stretch of useless land in which nothing will grow except an inferior kind of thatching grass. Further south of Loni, the khadir sinks into a lowlying tract which contains a number of depressions which are nearly always covered with water to a depth of two or three feet. The southern Yamuna khadir can be divided into two, upper and lower khadir. The upper khadir is a khadir without water; a khadir that is safe from flooding now by reason of the numerous works that cross and enclose it – the Eastern Yamuna canal; the East Indian Railway, which rubs embankment the whole way from the Hindon to the Yamuna bridge; the Hindon cut, which carries the water of the Hindon across to the Yamuna to feed the Agra canal; and the Okhla bund, which runs from the

Yamuna railway bridge along the bank of the river: but a tract characterized by peculiarly infertile sandy soil, called by the people *dabkans-ki-zamin* and altogether of very inferior quality. The lower khadir is khadir proper, subject to floods, but resembling often in soils the upper khadir.

Hindon

The Hindon forms the eastern border of the doab. It rises from the plains around north of Haraura in the Saharanpur district, closer to Dehradun. The Hindon runs southwards parallel to the Yamuna before emptying itself in the Yamuna, south of Surajpur village in Haryana. Its tributaries include the Kali Nadi on its east, and the Krishni (or Kirsani) Nadi on its west.

The Hindon's total length is approximately 260 km. It enters our study area at Baleni. The river is very winding, has no defined banks and covers large areas. The land on its both sides is subject to flooding during monsoons. The river is only navigable in the rains. The land inundated by the river is occasionally cultivated for the *rabi* crops, and the harvests are of excellent quality. However, in times of heavy flood the khadir lands are liable to become saturated and affected by the saline efflorescence known as *reh*. The *Gazetteer of Meerut* (1922 : 8) states, "of recent years there has in fact been a considerable development of *reh* in the Hindon khadir and large areas of land have not been ploughed for twenty years and more." The water from the river is used to irrigate the *rabi* crops and melons. The land east of the Hindon is "extraordinarily rich and uniform, fully irrigated and splendidly cultivated."

Like the Yamuna, the Hindon also runs in a southeasterly direction in consonance with general slope of the region. The erosion capacity of these rivers is restricted by the very gentle gradient.

Kirsani or Krishni River

Between the Yamuna and the Hindon, the Kirsani River rises in the plains of south of Chilkana, the Saharanpur district. After traversing through Saharanpur, Deoband, Kairana, Budhana, it joins the Hindon just below the town of Barnawa at Sardhana. It follows a southwesterly course and takes a sudden turn towards east to join the Hindon. Its approximate length is 121 km. It is an unimportant stream, having no towns on its banks and being little used for the purpose of irrigation. It flows in a well-marked bed, the banks of which on both sides are broken by numerous ravines, and the land in its neighbourhood is of a sandy inferior quality.

River Kali Nadi

The Kali Nadi rises in the plains of southwest of Badhai, Muzaffarnagar. After traversing through Muzaffarnagar, it forms a natural boundary between Budhana on the west and Jansath on the east. It joins the Hindon from the east at Pitlokkhar village of Sardhana. Its approximate length is 110 km.

None of these tributaries, however, fall in the region that has been surveyed in this work.

Hindon Khadir

The khadir of the Hindon varies in width: at Malahra it extends for a mile on each side of the stream, while at Barnawa it is little more than one-fourth of a mile in breadth. Further south, it widens out on the west to join the Yamuna khadir in the south of Baghpat, and then the khadirs of the two rivers unite to form the sandy tract already described. As the *Gazetteer of Meerut* (1922 : 8) informs, the land east of the Hindon is "extraordinarily rich and uniform, fully irrigated and splendidly cultivated. The country is drained either by the natural channels or by the cuts made by canal authorities".

THE YAMUNA IN INDIAN RELIGIOUS GEOGRAPHY

The Yamuna has a special place in Indian religious geography and has been frequently mentioned in the ancient literature. B.C. Law (1967 : 160-61) elucidates that during the Vedic period the Saraswati and the Yamuna were much better known and were important than the Ganga. He points out that the Yamuna is mentioned in the *Rigveda* (X., 75; V,52, 17; VII.18.19;X,75,5), *Atharvaveda* (IV,9,10), the *Aitareya Brahmana* (VIII, 14.4, 23), *Satapatha Brahmana* (XIII, 5, 4, 11), *Pancavimsa Brahmana* (X, 4, 11; XXV, 10, 24;13, 4), *Sankhyayana Srautasutra* (XII, 29, 25, 33), *Katyayana Srautasutra* (XXIV, 6, 10, 39), *Katyayana Srautasutra* (X, 19, 9, 10), *Asvalayana Srautasutra* (XII, 6, 28), Patanjali's *Mahabhasya* (1.1.9, p. 436; 1.4.2, p. 670), *Yoginitantra* (2-5, 139-140) and *Kalikapurana* (Ch. 15, 8). The Yamuna is personified as a goddess in ancient texts. It is known as *Kalindakanya* because it rises from the *Kalindagiri* (Raghuv., VI, 48). It is mentioned as *Kalindi* (perhaps because of the dark blue appearance of its water) in *Bhagwat Purana* (III. 4.36, IV. 8.43, VII.4.23, IX.4.30, X. 58.22), *Mahavastu* (III.201) and Banabhatta's *Kadambari* (p. 6). The *Puranas* identify the *Yami* (sister of *Yama*, god of the dead) of *Rig Veda Samhita* (10. 10) with the river Yamuna. In the *Ramayana*, the Yamuna has got several references (for example, *Ayodhya Kand* 54.2.6.8; 55.4.8.12-13, 19, 21, 23, 31-33). In the *Mahabharata*, the Yamuna is considered as a sacred river. When Yudhishthira was on his pilgrimage tour, he was asked by the sage Lomasha to take a bath in the Yamuna. This will wash away all sins of Yudhishthira and he will see all the worlds before his eyes. On the banks of the Yamuna, many kings and sages of ancient times performed sacrifices. According to the *Aitareya Brahmana* and *Satapatha Brahmana*, the Bharatas are famed as victorious on the Yamuna. The *Satapatha Brahmana* states that Bharata, son of Dusyanta, performed 78 *Asvamedhas* on the Yamuna and 51 on the Ganga. This again shows the significance of the Yamuna over the Ganga. The Yamuna was known to the Chinese travellers as *Yen-mok-na*. It served as the boundary between Surasena and Kosala, and further down between Kosala and Vamsa; Madura, the capital of Surasena, and Kosambi the capital of Vamsa, standing on its right bank. The *Skanda Purana* mentions the Valuvahini (?) as a tributary of this river.

The goddess Yamuna is depicted along with the goddess Ganga in the sculpture of many ancient temples, often flanking their entrance. It was believed that entering into the temple through these entrances, flanked by the sculpture of the Yamuna and the Ganga or either side, was like taking a bath in these rivers. Consequently, all sins of an entrant were believed to be washed away. In the sculptures, the Ganga is shown as, white as the moon, standing on a fish (*matsya*) or crocodile (*makara*). The Yamuna is shown as a dark goddess, standing on a tortoise (*kachchhapa*). Both goddesses are shown as holding fly-whisk (*chamara*) in one hand and a flower in the other. Elsewhere, they may be seen wielding a *purna-kumbha* (jar of plenty). The *Delhi Gazetteer* (1976 : 198) brings out a very interesting aspect. It states that it is generally believed in rural Delhi that the Yamuna washes away the sins committed in agricultural work, such as, beating of oxen, killing of mice and other insects, etc. This factor gives another reason to agricultural community to settle along the course of the river, particularly in the Yamuna-Hindon doab.

Upinder Singh in her book, "*Ancient Delhi*" has brought out certain significant issues related to the Yamuna:

"It is curious that although the Yamuna is recognized as a great river in ancient religious texts, no major sacred shrine or cult spot (leaving aside the Nili Chhatri temple) is located on the banks of this river in the Delhi area. On the other hand, several places that are important in current local religious geography can be found along the small streams that meander through the Ballabgarh hills south of Delhi. Some of these sacred places lay claim to great antiquity by linking themselves with famous *rishis* or sages known from ancient Sanskrit texts" (Singh 1999 : 11).

Thus, it seems that B.C. Law might not be exaggerating when he says that the Yamuna was an important river than the Ganga in the Vedic period.

D.C. Sircar (1971 : 23) points out by referring to R.C. Mazumdar's work, "*Hindu Colonies in the Far East*", that the streams of Bali are named after celebrated Indian rivers, such as the Ganga, the Sindhu, the Yamuna, the Kaveri, the Sarayu and the Narmada. This further shows the religious significance of the Yamuna.

Meanderings of the Yamuna

The meanderings of the Yamuna through millenniums, caused by tectonic forces have left their deep imprint on the physiography of the plains in the region. The work of A.K. Grover and P.L. Bakliwal titled, "*River Migration and Floods – A Study of a Section of Yamuna River through Remote Sensing*" (*Man and Environment*, volume 9, 1985 : 151-3) suggests that the Yamuna once flowed into the Saraswati (identified with the modern Ghaggar-Hakra). Over a period of time, the Yamuna moved more and more towards the easterly course. Consequently, it abandoned the Saraswati and joined the Ganga. The remains of at least six palaeochannels of the Yamuna have been identified through the study of Landsat imagery. Traces of old courses of the river can be seen in various lakes such as the Najafgarh, Surajkund and Badkhal lakes. The remote sensing studies show that the migration of the river ranged from 100 km in the area north and west of Delhi to 40 km in the area south of Delhi. However, the Yamuna seems to have remained more or less static in its present course around Delhi in a span of 4000 years.

In this process of meandering towards the east, the Yamuna deposited rich deposits of alluvium on either bank. With an average height of about 700 ft. above the sea level, the plains are considerably wider, more fertile and populous in the north and almost lose themselves in the regions of the historic capitals of Siri and Tughluqabad. Further south, the terrain becomes flatter and more open. The soil in this region is light sandy loam and is good for agriculture.

The meanderings of the Yamuna, and deposition of alluvium in the process over a larger part of the plains had very significant bearings on the history of ancient settlements in the region. Many stone age sites have been found in the hilly areas that were once traversed by the Yamuna. Also, several ancient sites grew up along the older courses of the river. Many ancient sites have also been identified in the Yamuna-Hindon doab. We will discuss about them in the later chapters.

The Soil Type

The alluvium plains of the Yamuna-Hindon doab can be classified as the *Khadar* plains and the *Banzar* plains. The region of recent deposits is known as the *Khadar* (*i.e.* the new alluvium, representing the present borders of the rivers). The *khadar* plain has a low level and is threatened by floods. It has a light sandy soil. The water table is fairly high, facilitating irrigation from wells. During my explorations in the Yamuna-Hindon doab, I found that the area is full of wells. There is a famous legend of Lakkhi banjarra (a nomad) in the area who was the head of a nomadic group. He used to get a well dug whenever he used to settle in the area, mid-way in his journey. This implies that even in the past the water level was very high.

The *Bangar* plain is the region of the earlier Pleistocene deposits. The general level of the *Bangar* is higher than that of the *Khadar*. The water table is comparatively lower. The patches of saline and alkaline efflorescence, which are partly a result of gentle slope and excessive quantity of soluble salts in the alluvium, are the main characteristics of the *Bangar* land.

Flora

The vast alluvial plain of the Yamuna-Hindon doab as we see today is the result of continuous deforestation since the second millennium B.C. In the ancient literary sources, we have ample evidence of there being a dense, moist, and luxuriant forest in the area. It is in the area in and around the Yamuna-Hindon doab that the *Mahabharata* grew up. According to the *Mahabharata*, the territory of the Kurus appears to have been divided into three parts, Kurukshetra, Kuru's country and the Kurujangala. B.C. Law (1967 : 119-120) points out that Kurukshetra, the cultivated lands of Kurus, comprised the whole tract on the west of the Yamuna and included the region between the Sarasvati and Drsadvati. The Kurujangala, the wasteland of the Kurus, was the eastern part of their territory, and appears to have comprised the tract between the Ganga and northern Panchala. This forest tract extended as far as the Kamyaka forest. The middle region between the Ganga and the Yamuna was called Kuru's country. Makkhan Lal (1984 : 14) states that both towards the north and south of the kingdom of Kuru was the forest called Kuru jungle, *Devipurana* (Chapter 74) mentions nine sacred forests and Kuru jungle was one of them.

Hastinapur, the capital of the Kurus was situated in a forested area in the Upper Ganga-Yamuna doab (which includes the Yamuna-Hindon doab) and the Pandavas after the division of the Kingdom founded the city of Indraprastha (modern Delhi) only after clearing dense forest. In this context Makkhan Lal (1984 : 14), points out that *Satapatha Brahmana* (1.4 : 1.4, 14, 15, 16) mentions that the area between Saraswati and Sadanira (modern Gandak) rivers was a dense forest and its Aryanisation was possible only after burning the forest. It was also cultivated subsequently.

The sandy and alkaline soil on the banks of the Yamuna supports rich vegetation after the monsoon and during winter. As the Yamuna river tract is a low-lying area, it is subject to frequent inundation and fluctuation in water level. The water recedes in winter, leaving behind a flora of aquatic herbs, sedges, and species of high attitude and temperate region. The *Gazetteer of Meerut* (1922 : 21-22) informs of several trees found in the area, such as mango, *bel*, guava, citrons of all kinds especially oranges, *lokwat*, peach, apple, pomegranate, pummelow, and several varieties of plums. Some of the common plants of this region are the liverwort (*Riccia*), horsetail (*Equisetum*), a tiny buttercup (*Ramuncullus sceleratus*), *Potentilla supine*, species of *Ammania Mazus japonicus, Polygonum plebeium* and *Juncus bufonius*. On the drier regions of the banks *Saccharum spontaneum* (kans) and *Tamarix troupi, Salsola baryosma,* and *Suaeda fruitcosa* (*bui*) are common.

During summer, many of the marshy areas in the low-lying region become dry. The soil of these areas is rich in clay and organic matter. Consequently, after the monsoon it supports luxuriant aquatic vegetation. Some of the most common aquatic plants of the region are *Chara* (a very highly developed green alga), the four-leaved clover-like water fern *Marsilea, Hydrilla verticillata, Vallisneria spiralis,* the blue lotus *Nymphaea nouchali, Polygonum glabrum, Nymphoides cristatum,* the water hyacinth *Eichhornia crassipes*, the water chestnut *Trapa bisipinosa* (*singhara*), the cat-tail *Typha angustata,* the so-called insectivorous bladderwort *Utricularia flexuosa* and the duckweeds (*Lemna, Wolffia,* and *Spirodela*).

In the absence of any pollen records from the surveyed area, let's look into the pollen records from the Hastinapur and Hulas excavations, and related information from the earliest Gazetteers from the region and other secondary sources. Hastinapur is not far from the Yamuna-Hindon doab and also forms a part of the alluvium plains of the larger Ganga-Yamuna doab. Pollen records from Hastinapur excavations show the presence of *Pinus*, *Dalbergia sisso* (Wild sissoo) and *Holorabera anthidysentrica* (*Kurchi*) (Chowdhury et. al. 1951:3). Samples of the charred wood from the OCP to the NBPW levels at Atranjikhera belong to *Pinus roxburgghii* (Chirpine), *Delbergia sisso* (Sisoo), *Tectona grandis* (Teak), *Boehmeria Platypylla* (Indica ramie), *Cedras deodara* (Deodar), *Cupressus* *torulosa* (Himalayan cypress), *Terminalia tomentosa* (Laurel), *Tamarix articulata* (Farash), *Dendrocalamus strictus* (Male Bamboo), *Acacia nilotico* and *Acacia arabica* (Babool) (Chowdhury et.al. 1977). The presence of these species shows that the Ganga-Yamuna doab was quite densely forested during the 2nd and 1st millennium B.C. The same can be said about the Yamuna-Hindon doab. This is further supported by the fact that, the people of the Yamuna-Hindon doab call their agricultural land "*bagh*" *i.e.* forest. The oral traditions of the people also acknowledge that the area was once very densely forested. In the Yamuna-Hindon doab, the village Ranap and Farrukhnagar was once hunting *sikargah* for the Mughul emperors. In the 16th and 17th centuries, elephants, lions, and tigers were in the entire Ganga-Yamuna doab (Abul Fazl: 320), of which the Yamuna-Hindon doab is a part. Presence of these animals suggests existence of dense forest in the Yamuna-Hindon doab during the 2nd and 1st millennium B.C.

Makkhan Lal (1984 : 15) takes the reference of G.S. Puri's work *Indian Forest ecology*, to state:

"The remnants of early forests can be seen in the patches of trees and plants like *Butea frondosa*, *Caseria tomestosa*, *Alienthus excelsa*, *Woodfordia floribunda*, *Melia indica*, *Basia latifolia Acacia leucophoria* and other species of *Bahunias* and *Eugenia* on the new alluvium along the large rivers and *Bambax malabaricum*, *Adina cordifolia*, *Logerstroemia perviflora, Lannea grandis. Goruga pinnota, Ganalina arboria, Casia fistula, Randia longispina, Zigyphus jujuba, Mallotus philippenensis, Callicarpa macrophylla* etc. in most of the sub-Himalayan tract of upper doab".

The presence of the varied species in the region and the fact that in the past the Yamuna-Hindon doab had much richer vegetation shows that it was easy attraction for the people to settle in the area. The rich vegetation together with agriculture (facilitated by the fertile alluvium soil and sources of water, such as the Yamuna, the Hindon and their tributaries, wells etc.) would have easily met the food requirements of the people. This is proved by the discoveries of several protohistoric and historic sites both along the banks of the Yamuna, the Hindon and their tributaries, and also in the areas away from the rivers. At Hulas (*IAR* 1986-87 : 132), in the Saharanpur district an impressive variety of crops have been encountered at the Late Harappan level. These include rice, barley, dwarf wheat, club wheat, oats (*Avena sativa*), sorghum/jowar, ragi/finger millet (*Eleusine coracana*), lentil, filed pea (*Pisum arvense*), grass pea (*Lathyrus sativa*), Kulthi (Dolichos biforus), green gram/moong (*Vigna radiata*), chick-pea or gram (*Cicer arietnum*), a broken seed cow-pea (*Vigna unguiculata*), cotton (*Gossypium arboreum*), castor (*Ricinus comunis*) and some varieties of fruit, such as Almond (*Prunus amygdalus*) and walnut (*Juglans regia*), and wild grasses. Dilip.K. Chakrabarti (1995 : 133) points out that almond and walnut clearly suggest that the late Harappans sites in the Indo-Gangetic divide were not temporary settlements but settlements with well developed farming practices. The identification of more than 130 Late Harappan sites in Saharanpur, Muzaffarnagar, Meerut, and Bulandshahr, all located on the rivers Yamuna, Hindon, and their tributaries further suggest that the Yamuna-Hindon (Upper Ganga) doab in particular was the one of the ideal ecological zone for the Late Harappans people to settle in the region. Also, the *Gazetteer of the Delhi District* (1883-84) states that the vegetation in the Delhi area was sufficient to provide subsistence to its inhabitants during the period of crop failure, which used to occur in every three to four years. This further implies that if the vegetation of the Delhi area, most of which constitute the rocky Aravalli ridge, was sufficient for its inhabitants as late as 1883-84 then the vegetation of the Yamuna-Hindon doab, having a alluvial plain, and as early as the ancient period when the wrath of deforestation was not as massive as in 1883-84 Delhi, and when the population pressure might have been far less than what was in 1883-84 Delhi, would have offered sufficient subsistence to its inhabitants. In fact, probably there was much more than what was required. And, as the pressure on land and vegetation increased with increase in population, and the need for exchange gained momentum, the inhabitants would have cleared the neighbouring forest to grab land for cultivation. Even then, the vegetation of the area would have offered at least the bare minimum subsistence to the inhabitants, similar to Delhi, which continued to provide subsistence to its inhabitants during the period of crop failure as late as 1883-84.

However, considerable deforestation due to intensive colonization and railway construction has brought the balance between man and vegetation to a very precarious stage. As a result, one notices that the 1860-61 famines in western Uttar Pradesh cost over 0.2 millions of lives. Though the famines were more a product of British colonial policies. The *Gazetteer of Meerut* (1922 : 60) states, "The recent famine history of Meerut is, in fact, merely a history of prices". But, famines do show that the balance between nature and man has been disturbed.

Fauna

The evidence of dense forest in the Yamuna-Hindon doab implies presence of large varieties of herbivores and carnivores. According to the *Gazetteer of Meerut* (1922 : 24-29), the principal wild animals in the then Meerut district (which comprised almost the entire explored region) were leopard, antelope, hog-deer, *nilgai*, fox, pig, wolf, jackal, porcupine, hare and monkey. It further informs that the "tigers have become practically disappeared". The references of other animals include, leopard, hyaena and antelope. Hares rove along the banks of the Yamuna, monkeys trouble people in the region around the Western Yamuna canal, and leopards move about in the peripheral villages. Mongoose, black buck, peafowl, duck, jackal, quail, snipe, snakes, *kulan*, partridge were in abundance and could be located everywhere. The gazetteer also informs us about the various types of fish found in the Yamuna. It talks about the river being infested with crocodiles. Makkhan Lal (1984 : 16) points out there is evidence of elephant, lion, tiger, and black buck in the literary sources, such as Abul Fazl's *Ain-I-Akbari*. At present, most of these animals have been confined in the Tarai region mainly in reserved forests.

As far as the domesticated animals are concerned, the *Gazetteer of Meerut* (1922 : 27-28) informs that in 1899 there were 252,866 bulls and bullocks, 129,620 cows, 124,827 cow-buffaloes, and 293,826 young stock. The gazetteer states that these figures stand in a high proportion to other districts and Meerut also contains a very large area of grazing ground. Similarly horses, mules, and donkeys were more numerous in then Meerut district than any other district of the united Provinces. Moreover, the number of sheep and goat were also very high. Here, I would like to mention about the village Katha and Mandaula, where I noticed that the sites possessed huge heaps of bones. From the size of these bone it appeared to be bones of animal.

An interesting thing that has been said in the gazetteer is that the cattle disease is not very prevalent in the district. Among birds the references include, wild duck and teal, snipe, geese, black partridge, grey partridge, and sand-grouse. The house sparrow (*Passer domesticus*) is the most common. Other common birds of the region include house crow (*Corvus splendens*), jungle crow (*Corvus macrorhynchos*), green parrot, peacock, dove, eagle, vulture, blue-pigeon, white heron, and black raven. Among the migratory birds the most common are ducks, geese, and teals of many varieties.

Climate

The climate of the Yamuna-Hindon doab is mainly influenced by its inland position and the prevalence of continental air. The climate is semi-arid, characterised by extreme heat and dryness during summer and very cold winter. It is moderate during the three monsoon months – July, August, and September–when the South-West winds of oceanic origin reach the doab and cause precipitation and increased humidity. The annual climatic cycle consists of four seasons: cold season starts in late

November and extends to about the beginning of March. This is followed by the hot summer season which lasts till the end of June when the monsoon arrives in the doab. The monsoon season (wet summer) lasts till September. October and November characterise the post monsoon (pre-winter) season. This season constitutes a transition period from the monsoon to winter season.

Interestingly the *Gazetteer of Meerut* (1922 : 29-33) informs that the comparative vicinity of the mountains and the high altitude combine to render the district one of the healthiest parts of the plains of India. The weather for five months, from November to March, is delightfully cool. In April, the hot westerly winds commence, which generally cease in June. They make the atmosphere sultry, but are not at all injurious to health; many persons, in fact, who suffer severely from rheumatism and remittent fever, enjoy better health during the hot weather. When the regular rains set in it continues fairly cool till the end of September; during this month it is cloudy, with little wind, and occasionally extremely hot and exhausting. This is the most unhealthy season of the year. In October, though the days are very hot, the nights gradually become cool and pleasant. The gazetteer further informs that then Meerut itself was considered one of the healthiest stations in India.

Rainfall

The average annual rainfall over the doab is 660.1 mm. About 74% of the annual rainfall is received during the monsoon months. November and first part of December is generally rainless. In June, the rainfall is for three to four days, while in other months rain falls on a day or two in each month.

Temperature

The cold season starts towards the latter half of November when both day and night temperatures drop rapidly with the advance of the season. January is the coldest month with the mean daily maximum temperature at 21.3°C and the mean daily minimum at 7.3°C. In winter, minimum temperatures may sometimes go down to freezing point of water. From about the middle of March, temperatures begin to rise rapidly. From April, hot winds (*loo*) blows and the weather is unpleasant. May and June are the hottest months, when the temperatures may reach 47°C. With the monsoon beginning towards the end of June or the beginning of July, day temperatures drop appreciably while the night temperatures remain high. In October, the nights are cooler.

Agriculture and Irrigation

According to the *Gazetteer of Meerut* (1922 : 36-40) the district has always been very highly developed, and the large proportion of cultivation to the total area has ever been a noticeable feature since the advent of British rule. In 1895, over 70% of the area was under cultivation. In 1902, it increased to 72%. Cultivation received a great impetus from the rapid extension of canal irrigation. *Reh* has been pointed out as a serious threat to agriculture. It is caused by waterlogging and the problem has aggravated by the excessive irrigation and general influence of canal on the water-level. The gazetteer further informs that according to some of the zamindars *reh*-affected land can be cured by shutting off the water-supply and allowing the soil to remain dry for a few years. The gazetteer further informs that the double-cropped area is large. During my survey I noticed that double cropping was widely practised in the entire Yamuna-Hindon doab. People are very proud of the fact that the soil is very fertile and any crop could be easily grown in the area.

Irrigation

The *Gazetteer of Meerut* (1922 : 47-57) reports that Guthrie, the Collector of the Meerut district in 1807, represented that irrigation was then very scanty. In 1836 the irrigated area amounted only 27% of the cultivation. In the context of agro-climatic conditions, rains are a very lean source of supply as these are scanty and erratic in occurrence. Both the total rainfall and the total number of rainy days in a year show much variation.

The two major sources of irrigation are canals and underground water through wells.

The Eastern Yamuna canal provides the largest canal irrigation. It was constructed during the Mughal dynasty, probably during the reign of Muhammad Shah. The canal enters the Meerut district at the 83rd mile and falls into the Yamuna opposite Delhi, after a course of 46 miles through Chaprauli, Baraut, Baghpat and Loni. The canal gives off a large number of distributaries. In the north to the west of canal are the Khandrauli and Kandhla distributaries which unite near Chaprauli and fall into the Yamuna below Kutana. These with Nala, which terminates into the Alawalpur drain, irrigate Chaprauli and Kutana. Further south are the Khekra, Mitli and Sirauli distributaries, which irrigate Baraut, Baghpat and Loni. To the east of the canal are Fazalpur, Bijwara, Kishanpur,Baoli and Miranpur distributaries, which fall into the Hindon. They irrigate Chaprauli, Baraut, Barnawaa and Baghpat. Dalua is another distributary that waters east of Baghpat and falls into the Hindon. Kotwalpur distributary irrigates the east of Loni and terminates in the Khadir. From the east, the right main distributary of the Ganga canal tails off into the Hindon at Sardhana.

Another important source of irrigation are wells. According to the *Delhi Gazetteer* (1976 : 215), in 1965-66 there were about 17,954 wells in the Delhi region, which were sources of irrigation, and were mostly in the trans-Yamuna area. This shows importance of a well in agriculture. Here it must be pointed out that during the exploration it was noticed that the Yamuna-Hindon doab is full of wells.

It is difficult to estimate the comparative advantages of canal and wells over each other. However, the *Gazetteer of Meerut* (1922 : 55-56) states that a cultivator whose land receives canal irrigation can cultivate 39 *bighas* with as much facility as the man dependent on well irrigation can 20 *bighas*. One main complain against the canal system is that the water is frequently shut off when it is most needed. On account of this, and also because they consider that well water is superior to that of canal, some cultivators prefer irrigation from well to any other system.

The other major and the main sources of irrigation are the Yamuna and the Hindon itself together with their streams and the canals.

Crops

The two main groups of crops are *kharif* and *rabi*. The *Gazetteer of Meerut* (1922 : 39-47) states that the *kharif* generally covers a greater area than that sown in the *rabi*, except in the Ghaziabad Tehsil and occasionally in Baghpat. The *kharif* crops are diversified. The main *kharif* crops are millets (*jowar* and *bajra*), pulses, and rice. *Bajra* is the major *kharif* crop grown in the area.

Rabi crops consist mainly of wheat, barley, and gram. In the remaining area potatoes, vegetables, oilseeds, cotton, tobacco, sugarcane, chillies, fodder, and other non-food crops are grown. The other subsidiary crops include mango, guava, grape, strawberry, tomato, brinjal, radish, watermelon, cauliflower, calibage, cabbage, and onion.

Cropping Pattern

The cultivators divide the agricultural year (*fasli*) into three seasons each of which has its own distinctive group of crops: *kharif* (rainy season), *rabi* (winter), and *zaid* (summer). *Zaid* is economically less significant than the other two. The agricultural year begins with the month of *Asarh* (June-July), when the soil is moistened by the first fall of the monsoon rains and farmers sow their *kharif* crops. Where the land is low-lying and the water supply is abundant, paddy is sown. On the drier and elevated land, small millet and maize are sown. Followed by *jowar*, *bajra*, pulses, and pulses later in the season. *Kharif* harvesting is spread over the months of *Bhadon*, *Kuar* and *Kartik* (September-November). In regions, where the soil is rich enough for intensive cultivation, *rabi* crops are sown for the second harvest. However, such double cropping was rare as late as 1960-61. *Rabi* crops are sown on plots set aside for that harvest and prepared while *kharif* crops ripen. *Rabi* harvesting lasts from March to May, covering the months of *Chait*, *Baisakh* and *Jeth*.

The type of soil and the availability of irrigation facility determine the pattern of agricultural production. Where the water is far from the field, making irrigation difficult, *kharif* dominates *rabi*. Where soil conditions are good mainly *jowar* is grown.

Farmers are dependent on rainfall to secure good harvest. Unevenness in the rains can cause scarcity. More important than the adequacy of rain is its precise distribution over the rainy months. To cope up with the uncertainty of rains, the farmers sow two, three or even four crops, each season, within a single plot. Consequently, if one crop fails, the farmers can fall back on the other crops.

Rotation of Crops

Regarding rotation of crops, the *Gazetteer of Meerut* (1922 : 39-40) aptly sums up:

"The standard of cultivation is generally so high that little improvement is to be expected in the way of rotation of crops or otherwise. Generally, if the land be irrigated, one-third of a cultivator's holding is allowed by him to lie fallow for one harvest in the year; but if the land is solely dependent on the rainfall, only one crop is annually produced. Starting with an irrigated plot and with wheat as the first crop, the *kharif* crop will be maize or *bazra*, with gram in the ensuing winter. Then will come cotton, and in the following harvest the land will lie fallow. Then sugarcane, which takes up the best part of the year, followed by a light *kharif* crop grown as fodder. This is merely an example: the general rule is that land must lie fallow for at least one harvest in three years where there is ample irrigation, while in dry land the period of lying fallow recurs more frequently. There is one peculiarity regarding the treatment of fallows in this part of the Doab that deserves mention. For half the fallow season the land remains as it was after harvest, and then the land is ploughed usually in two ploughings."

Types of Crops

Sugarcane : The most important crop is sugarcane. This *kharif* crop, according to the *Gazetteer of Meerut* (1922 : 40-41), "is that from which the tenant pays his rent and the zamindar his revenue." The gazetteer further informs that the cultivation of this crop has shown considerable increase during the past century. In 1901, 9.97% land was under cane cultivation. Its extension is chiefly due to the canals. The *gur* made, were exported to Jaipur and other trans-Yamuna states. The largest area under cane is the Baghpat tahsil. In Ghaziabad too, it occupies a dominant place.

Sugarcane requires a large number of ploughings and much manure. It is sown from *Phagun* to the end of *Chait* (March - April), and is cut in *Pus* and *Magh* (January-February).

When the cane is planted, the plough becomes an object of devotion and receives offerings of turmeric and rice. The first cane is cut at the Diwali and a red thread is tied round the bundle; after the ceremony the cane is distributed, and the occasion is made to serve as a pretext for a communal feast. Other ceremonies are connected with the pressing and boiling of the juice.

Maize : Next in importance comes maize. This crop is sown in *Asarh* and reaped in *Kuar*, and is grown in loam or clay soil. It requires several ploughings and is usually irrigated. It is chiefly grown in Baghpat, but an increasing area is coming under maize.

***Jowar* and *Bajra* :** According to the *Gazetteer of Meerut* (1922 : 42), of all *kharif* crops, *jowar* covered the largest area, over 17% of the cultivation. It is sown in *Asarh* and grown in all kinds of soil, but is generally found in a better soil than *bajra*, the other large millet which grows well in sandy *bhur*, where other crops fail. It is chiefly grown in the sandy tracts of the east and in inferior loam. A large amount of *jowar* is grown for fodder, called *chari*. The *chari* is sown in *Baisakh*. *Jowar* and *bajra* are chiefly grown in Ghaziabad and Baghpat.

Cotton : Cotton is grown everywhere, and being a cash crop is valuable to farmers. It requires good land and manure, and gets easily affected by frost. Cotton stalks are also used for basket-making, roofing, matting to protect earthen well and fuel. It is chiefly grown in Ghaziabad and Baghpat.

Rice : It is grown largely in the lowlying portions, but its cultivation has been affected by numerous drainage works which have dried up many of the *jhils* on whose bank it was grown. It is chiefly grown in Ghaziabad and Baghpat.

Other *Kharif* Crops

These include:

Urd, a valuable crop, sown in light soil in *Asarh* and is ripe by the end of *Kuar*. 10% of land is under *urd* cultivation.

Moth, is grown in *bhur* land and requires no irrigation. It is often sown together with *urd*.

Mung is very similar to *urd*.

Oilseeds, such as *til* (*sesamum indicum*) is sown at the end of *Kuar* and is ripe about the beginning of *Baisakh*. It is usually grown as a fence round crops of *jowar*.

Wheat : Among *rabi* crops, wheat is the most important. It is grown in all types of soil, either alone or mixed with barley or gram. In 1860, 26% of the land was under wheat cultivation in the Meerut district (*Gazetteer of Meerut* 1922 : 44-45). Wheat requires seven ploughings and several waterings. In the khadir, irrigation is not required. A large area is sown with wheat on the chance of rain, and the experiment pays if a good crop is obtained once in every three or four years.

Gram and Peas : Next to wheat are gram and peas (*Gazetteer of Meerut* 1922 : 45-46). Peas are often irrigated, while gram is chiefly a dry crop. *Masur* is also grown together with gram and peas. In 1869, 10% of the land was gram, peas and *masur* cultivation. The largest areas are in Meerut, Baghpat and Ghaziabad but these crops are grown largely everywhere.

Barley : It is grown in the poorer land where the soil is sandy and irrigation deficient. The crop is grown rather later than wheat and reaped a little earlier. It is mostly eaten by poorer classes.

***Arhar* :** It is properly a *kharif* crop, but is not harvested till spring. It is largely grown in the area, along with other *kharif* crops and is left standing after the autumn harvest. It is sown in *Asarh* and reaped in *Jeth*.

Melons : Among *zaid* crops, melon is the principal crop. Both musk-melon and water-melon is largely grown on the banks of the Yamuna and the Hindon. They are sown in *Phagun* and *Chait*, and are ripe during the hottest part of summer. They possess a considerable reputation for a farmer.

Food Habits

The chief articles of food of the poorer classes are maize, and *chapattis* of *bajara*, *jowar* and barley, and wheat when it is cheap. To these may be added the inferior grains eaten by the lower castes, such as *sanwak* and *pusai*, which grows spontaneously, and *mandwa*, a very cheap and somewhat unwholesome grain. The other classes eat similar food, using more wheat and split pulses (*dal*). Among the higher and well-to-do middle classes the chief food is gram, rice and wheat. Fish is also an important diet, except of Brahmanas, Jats, Gujars and Banias. Among vegetables, cucumbers and melons are widely consumed.

Floods

Floods occur in the low-lying *khaddar* area when the Yamuna rose. However, the standing crops are seldom damaged because the river is fairly regular in habits. Thus, it seems that the floods were not a very potent threat for the settlements in the area.

Industries

The industries that are prevalent in the area include leather, cotton fabrics, blankets, silk, pottery, glass, iron vessels and ivory goods. The products are mainly exported to neighbouring towns such as Delhi and Kanpur. Being in close proximity to Delhi, which was made capital at least seven times in history, the area must have acted as an important manufacturing centre in the past.

Trade and Communication Routes

Delhi's location as a capital of several kingdoms has acted as a catalyst for development of various trade and communication routes since ancient times. Lying on the way to heartland of India, Delhi and the Yamuna-Hindon doab has witnessed a continuous movement of immigrants from the North-West, spilling over the vast land drained by the two sacred river systems – the Yamuna and the Ganga. Both Delhi and the Yamuna-Hindon doab area was more than a transit camp for many of these migrants. The area offered them a permanent place of residence and provided a vital link of communication between the Indus Valley and the Gangetic plains. From a transport standpoint, Delhi constitutes a centre of international importance, and is also a metropolitan regional centre for a considerable portion of North-West India and an urbanized area requiring inter-community movement of both persons and goods.

This observation would have been equally valid if it was made thousands of years ago. Sandwiched between Hastinapur and Delhi, various settlements of the doab, Baghpat, Loni, Mandoli, Kaseri, Alamgirpur, Allahapur, Hulas, and other innumerable sites that have not yet been excavated, might have been directly or indirectly related to trade and commerce or would have at least acted as peripheries of regional centres. In this context, T.N. Roy (1983 : 256) also suggests that Alamgirpur, Allahapur and Kaseri were village settlements serving the urban settlement of Hastinapur. He argues that these sites were away from the main trunk route and were not situated on the important rivers (such as the Yamuna) having perennial source of water. Therefore, they remain a rural settlement. If we take this view then it goes on to suggest that Baghpat, Katha, Manduala, Loni and Mandoli situated on the banks of the Yamuna, having perennial source of water, might have been important urban settlements. And, by the term urban itself, it further goes on to imply that they were important administrative and/or trade centers. Again, being in close proximity to Delhi (Indraprastha) the inhabitants of these areas could have benefited from Delhi's position as an important administrative and trade center. In this context, the *Gazetteer of Meerut* (1922 ; 101) states that "the bulk on the trade is in grain, sugar and cotton". Leather is also an important object of trade. In 1901, over 22% of the population lived on manufacturing (20%) and trade, transport and storage (2%).

Let's analyse Delhi's position and its role in the entire commercial setting.

Towards the west of the Yamuna-Hindon doab, Indraprastha, the legendary capital of the Pandavas, was connected by road with many important towns situated in the belt stretching from

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the north-west to the Ganges delta in the Bay of Bengal. The existence of a trunk route is also suggested by the discovery of a minor Asokan rock edict in South Delhi near Srinivaspuri. This rock edict is situated at a site almost in alignment with other ancient sites in the vicinity stretching from Purana Qila (where Indraprastha is believed to have once existed) to Tilpat–all of them situated on the banks of the Yamuna. The *Mahabharata* describes in detail the movement of the *Chaturangani Senas* (four-limbed army-infantry, cavalry chariots and elephants) from all directions to the battlefield of Kurukshetra. The Yamuna flowing nearby would have also offered the facility of water transport.

Since the ancient times, Delhi had important road links with Taxila in the north-west, Kurukshetra in the plains of Punjab, Hastinapur near Meerut, Kausambi on the bank of the Yamuna near Allahabad and Kasi, modern Varanasi. Active trade and commerce between these towns laid the foundation of the northern trunk route running across the sub-continent from the north-west to the east. During the Mauryan period the route was further developed and numerous off-shoots came into existence. From Kausambi, the main route went along the Yamuna until it reached Indraprastha. It moved further north, passed Kurukshetra and crossed the rivers of the Punjab on its way to Sialkot and Taxila. This route was also connected with Pataliputra and Varanasi.

Delhi was also connected by road with Kanauj, Gwalior, Dhar, Amroha and Daultabad. Most of these roads were provided with tree, rest houses, postal stations and steep wells.

Thus, it seems that Delhi performed triple functions of, firstly, central administration, when capital of several kingdoms were established here; secondly, it serviced commerce and trade; and finally, it produced a variety of consumer and producer goods. It was undoubtedly a prosperous city and its people enjoyed comparatively high standards of living. The prosperity of Delhi must have also brought prosperity in its neighbourhood, the Yamuna-Hindon doab. The inhabitants of the doab must have sold their goods and services at Delhi (and also at Hastinapur and other neighbouring towns) to make handsome income.

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Village Settlement Pattern

The average distance at which the villages are located in the region is 2.4 km. O.H.K. Spate and A.T.A. Learmonms (1963) elucidate the village settlement pattern of the area. They state that in the past defence played an important part in defining the settlement pattern of a village, especially in the areas open to constant disturbance, such as the Sutlej-Yamuna and the Ganga-Yamuna doabs. Villages are generally grouped around a petty fort; and even today the close-packed houses, with blank outer walls and low doorways, massed into a ring with few entrances present a defensive aspect. The villages are generally around the bluffs above the flood plain and the margins of abandoned river courses. The bluff villages tend to be larger than those on the drier interfluves. They have the advantage of two types of terrain:

1. The upland doab and the valley-bottom with its tamarisk brakes and the excellent soil of its chars and diaras.
2. The flood plain islands–submerged in the rains and liable to disappear completely in floods but cropping up again sooner or later.

These alleviated areas generally grow cash crops of high value. The crops could be easily irrigated by wells, taking advantage of the high water table. They are often used as markets and are therefore, settled near the large towns.

There is in general very little that looks like a "plan", other than that dictated by such site factors as alignment along bluffs or leeves, grouping around a fort or a tank; but within the seemingly chaotic agglomeration there is, as a rule, a strong internal differentiation, that of the separate quarters for various castes. The untouchables are segregated and are sometimes located 100 yards from the main villages of which they are service-components.

In the Yamuna-Hindon doab, an ordinary village is square and flat, with purely conventional boundaries, and the main site in the centre. The typical village contains about 2,000 inhabitants and 2,000 *bighas*, generally in the shape of an irregular square. Before the British rule, the houses were closely packed together into a central site, the outer walls generally adjoining, so that the village often presented the appearance of a walled and fortified enclosure. For defence purposes, many of the villages are located on rising grounds. But this is also due to the necessity of drainage.

In 1901, an average of 5.95 persons lived in each house. In 1881, the average was 8.73.

O.H.K Spate and A.T.A Learmonths while emphasizing on the need of undertaking a geographical study of the house-types, suggest that both environmental and social factors played an important role in determining the house-types of the inhabitants of a village. They say that the geography of the house often reflects the age-old religious and magical traditions. They point out that the environmental influences are well seen in the flat roofed blank-walled box standard in the Punjab and western U.P. This is due to arid climate of South-West Asia. According to the *Gazetteer of Meerut* (1922 : 103), the houses are built of mud and roofed with straw. Four or five such houses are usually to be found in a single enclosure. The lower castes live in straw huts called *raotis*, and in many villages a whole family lives in one such hut. Occasionally a great number of these are huddled together with a courtyard in the centre, which serves the same purpose as a *chaupal* among the higher castes. Masonary houses are owned by Banias and Jats. This bears evidence of fine crops. These are usually surrounded with a high brick wall, enclosing a courtyard and entered by a lofty doorway. On one side are stables and on the others the men's and women's apartments.

The general standard of living seems fairly high. Many larger communities hold land in several villages. According to the *Gazetteer of Meerut* (1922 : 104), the condition of tenants also is generally good.

Caste *panchayats* or local indigenous tribunals decide disputes affecting caste, family, relationships and private quarrels. The membership is hereditary, and the eldest of a family is given preference over new men, unless he is unfitted for duties.

In the case of trades or professionals, *chaudahris*, elected by people decide *biradari* or guild matters and disputes. Though the post becomes hereditary, in cases of great dissatisfaction the hereditary *chaudhary* are displaced and new one is elected. In large bazaars, *chaukraiyat* stands with regard to shopkeepers in the same position as the *chaudhari* in relation to trade. In places where many Brahmanas live, they form themselves into parties called *tharas*, each of which is presided over by a *sardar*, who performs the same duties as a *chaudhri*. The strength of these communities lies solely in their union.

Inhabitants

The inhabitants in this area include Jains, Muslims (Sunnis are in majority), Sheikhs (of Siddiqi and Qureshi sub-divisions), Muslim Rajputs (belonging to Chauhan, Pundir, Tomar, Bargujars, Bhattis, Bhale Sultans, Gahlots and others), Julahas (weavers), Pathans (Yusufzais, Ghoris, Lodi, Rohilla, Kakar, Bangash, Tarin and Afridi), Saiyids (Zaidi, Husaini, Rizwi, Jafari, Muzwi and Bukhari), Muslim Tagas, Muslim Jats, Hindu Chamars, Jats (Heles and Dhes, corresponding to the Pachhades and Deswales of Rohilkhand and Delhi. The Dhes call themselves Sikhs. The Heles say that they have come from Jaisalmer about 1100 years ago, and they first settled in Chaprauli, Kutana and Baghpat.), Brahmanas (Gaur, Saraswati, Sanadh and Kanaujia), Rajputs (Chauhan particularly in Baghpat and Ghaziabad). But they are not regarded as Kshattriyas and do not intermarry with the Rajput clans; Gahlot, trace their antiquity to Govind Rao, a general of Prithvi Raj Chauhan. They hold a number of villages in Baghpat and Ghaziabad; Tomar, they consider themselves descendent of the Pandavas and claim kinship with the Tomar Rajas of Delhi. It is said that Bhadsana was established by Bhadpal, the 10th Raja of the Tomar dynasty of Delhi; other castes include: Bargujars, Panwars, Pundirs, Dors, Kachhwahas, Parihars, Rathors, Surajbansis and Bachhals, Banias (Agarwal, Rastogi, Barasenis, Bishnoi), Gujar, Ahirs, Bhangis, Koris, Faqirs, Kumhars, Malis, Barhais, Lodhs and other Muslims, such as Faqirs, Bhangis, Bhishtis, Lohars, Telis, Barhais, Darzis, Nais, Dhobis, Gaddis, Ghosis, Manihars, Kambohs and Mewatis.

Historical Outline

The Yamuna-Hindon doab occupies a very significant place in the social, economic and political history of north India. The stage of the *Mahabharata* was set in and around the Yamuna-Hindon doab. According to the *Mahabharata*, Hastinapur was named after king Hastin of the Paurava dynasty, who is said to have founded it. In the main line of Hastinapur, Kuru extended the Kaurava Kingdom and it was after him that the area acquired the name of Kurukshetra, "land of Kuru". The dynasty also came to be known as Kaurava, "of Kuru". Seventeenth in descent from Kuru was king Vichitravirya, who had two sons Dhritarashtra and Pandu, with whom begins the proper story of the *Mahabharata*. This well-known story need not be repeated here but an attempt has been made to study the historical geography of the Yamuna-Hindon doab and its neighbourhood.

In order to prevent conflict between his sons and sons of Pandu, Dhritarashtra divided the kingdom into two, giving Hastinapur and adjacent territories to his own sons and Indraprastha (identified by tradition with the ancient mound of Indrapat on which stands Purana Qila at Delhi) and it's environ to sons of Pandu. The next important reference is to Varanavata, identified with Barnawa (Lal 1954-55 : 149) at the confluence of the Krishni and the Hindon rivers in the Meerut district, where the Kauravas built a lac-house and conspired to burn their cousins to death.

On their return from exile, the Pandavas requested the Kauravas to return five villages to them. B.B. Lal (1954-55 : 147-149) brings out possible identification of these villages: Vrikaprastha with Baghpat on the bank of the Yamuna; Varanavata with Barnawa, Indraprastha with Indrapat of Purana Qila, Delhi; Asandi may have been Hastinapur or Asandh on the bank of the Chitang; Tilpat (also ancient Tilaprastha) is located about 13 miles south of Delhi; Panipat (probably ancient Paniprastha) and Sonepat (probably ancient Sonaprastha) are stations on the Delhi-Ambala section of the Northern Railway.

Other sites associated with *Mahabharata* are Kurukshetra, Krishna's Mathura, Abhimanyu seems to have been killed at Amin (Lal 1954-55 : 149), a place 5 miles south of Thaneshwar, Raja Karan ka Qila in Kurukshetra, seems to be associated with Karna. *Gazetteer of Meerut* (1922 : 149) also points out associated places, such as Parichhatgarh (fort of Parikshit, son of Abhimanyu) in Mawana. Garhmuktesar on the Ganges is said to have been a part of Hastinapur.

The Kauravas refused to give the villages to the Pandavas, which led to the great war of *Mahabharata*. The Pandavas emerged victorious and Parikshit, son of Abhimanyu ascended the throne of Hastinapur. During the reign of the last-named king Nichakshu, Hastinapur was carried away by the Ganga. Consequently, the capital was shifted to Kausambi. The Puranas then continue the list of the rulers at Kausambi, till we reach Udayana, 24th in succession from Parikshit and a contemporary of Buddha. B.B. Lal (1954-55 : 149) points out that the *Petavatthu Commentary* says that Buddha predeceased Udayana. He further points out that the usually accepted date of Buddha's death is 483 or 487 B.C. With this date as the basis and with 18 years as the average per ruler, Pargiter dates the *Mahabharata* to *circa* 950 B.C.

The earliest historical connection that can be made with the area is the erection of an Ashoka pillar near Meerut. On the ridge at Delhi stands a pillar, which according to Shams-I-Siraj (Elliot 1953) was removed from near the town of Meerut. With rise of the Magadha Janapada in the 6th century B.C. and the extension of Mauryan Empire from Patliputra to Afghanistan, the doab area became a part of the Mauryan Empire. After the death of Ashoka, the Mauryan power declined and the doab fell into the hands of Greek invaders. Meander ruled almost over the whole of northwestern India upto Ayodhya. But soon Pushyamitra Sunga (187-151 B.C.) liberated it from the Greeks.

During the first century B.C. an independent dynasty of Mitras sprang up in the doab. Later, during the first two centuries Kushanas brought stability and prosperity in the area. After Kushanas, only Guptas (320 A.D.) could provide the stability in the area for nearly two centuries. The *Prayaga Prasasti* of Samudragupta refers to 9 kings defeated by him and extension of his empire up to Delhi. However, the continuous invasion of the Hunas from the west exposed the weaknesses of the rulers after Samadragupta and the empire declined by 550 A.D. From 515-535 A.D. the Hunas under Mihirkula ruled the entire northwestern area. However, the rivalry between the Maukharis, Guptas and Hunas saw Maukharis rising to power. Under the Maukhari ruler Harsha (606-647 A.D.), the area regained its glory. After Harsha, absence of any paramount power led to rise of small states always fighting with each other in the northern India. Many wars were fought between the Rashtrakutas of Deccan, Palas of Bengal and Pratiharas of Rajasthan for supremacy over the entire Ganga-Yamuna doab.

The political instability encouraged the Muslim invaders. In 1010 A.D. Mahmud plundered most of north India and took away enormous booty to Ghazni.

In the first half of the eleventh century, Saiyid Salar Masud invaded and captured the city of Meerut. Firishta says that Mahmud on his ninth expedition invaded Meerut in 1017 A.D. and exacted from Raja Har Dat, who was the leader of Dors, a large sum of money.

The fort at Loni is said to date from the time of Prithvi Raja of Delhi in the last quarter of the twelth century. In 1191 A.D. Qutb-ud-din Aibak, the slave General of Muhammad-bin-Sam, invaded the area. In Meerut, a mosque built by him bears his name till today.

On the walls of a mosque at Garhmuktesar an inscription records that in 1255 the fief of Meerut was conferred on Malik Kishli Ulugh Khan on the occasion of his visit to Karra to pay his respects to the Sultan Nasir-ud-din Mahmud. This Ulugh Khan was afterwards known as Balban, and became the Sultan of Delhi.

Baghpat, Ghaziabad and Meerut were some of the places in the United Provinces to suffer under the invasion of Timur in the end of 1398. R. Burn in the *Gazetteer of Meerut* (1922 : 152) has done an extensive study of Timur's autobiography and the *zafarnama* of Yazdi. He illustrates that marching from Kaithal, Timur came to Panipat, and thence by Kanhi-gazin to the Yamuna, where he faced the opposition of Loni. After capturing Loni, Timur marched along the Yamuna and captured Delhi. From there he marched six *kos* to Mudula, which may be identified with the present village of Manduala. Then he marched 5 or 6 *kos* to the village of Katah (modern Katha village). From there, he proceeded to Baghpat, and thence to Asar, and then to Meerut. After the departure of Timur, Meerut became the headquarters of Sultan Nasir-ud-din Nusrat Shah in March, 1399. From here Nusrat Shah preceded to Delhi. Next, we hear nothing much of the area. Before the accession of Bahlol Lodi, the country from Sambhal to Delhi was held by Darya Khan Lodi, and Niamat-ullah refers to Loni as his western boundary. The area remained undisturbed during the rule of the Lodi Sultans, and after the battle of Panipat in 1526 it was held by Babar and Humayun, till the defeat of the latter by the Afghan, Sher Shah, in 1540. He later occupied Delhi, but he died in 1542. Here it must be noted that the village Pasunda has a mosque made by Sher Shah Suri. People say that he used to come here for hunting.

One Alam Khan Miana created a disturbance in the doab and raised Meerut. He was slain by Bhagwant, the slave of Khawas Khan, Governor of Sirhind.

In spite of its proximity to the imperial capital, the references to the area are few. It was frequently visited by the imperial emperor and the nobles for the pleasures of chase. Loni, Pasunda and Ranap village were once favourite hunting fields. Ranap village still has remains of a hunting resort built during the Mughal period. The Village Farrukhnagar, is also said to be made by Farrukhsiyar as his *sikargah*.

The area suffered from the disorder that followed the death of Aurangzeb. It was during this period that the area was ravaged by Sikhs, Marathas and Rohillas, while the local chieftains, Gujars and Jats began to establish their influence. The general anarchy was enhanced by the invasion of Nadir Shah in 1738, which so weakened the central authority that the Rohillas threw of all pretence at allegiance, and Marathas, Sikhs, Jats and Afghans considered the doab as a fit object for spoliation.

From the death of Aurangzeb to the British conquest in 1803, the area was in reality ruled by the local chieftains of Gujars and Jats and was only nominally under the rule of the Delhi Emperor.

After Nadir Shah, Ahmad Shah succeeded the throne in 1748, but the power was in the hands of his *wazir* Ghazi-ud-din, who was succeeded by his nephew Shahab-ud-din, who also assumed the title of Ghazi-ud-din, and founded Ghazi-ud-dinnagar, modern Ghaziabad.

In 1756, Ahmad Shah Abdali invaded and sacked Delhi but retained Ghazi-ud-din as the *wazir*. Towards the end of 1760, Ahmad Shah crossed the Yamuna at Baghpat and routed the Marathas at Panipat. However, the Marathas with the help of Jat leaders Suraj Mal and later his son Jawahir Mal in 1771 again became predominant in the doab, and the Rohillas were confined to their own country beyond Ganga. In 1779, Sikhs entered doab and laid the whole country waste. However, in 1780 they were defeated and retired across the Yamuna by Mirza Shafi, who became the real ruler of Delhi in 1783. In 1783, Afzal Khan proclaimed himself as the ruler of the Upper Gangetic doab. From 1792 to the British conquest in 1803, the doab was in the hands of the Marathas. In 1857, the area became active ground of the Mutiny of 1857, with Meerut as the nucleus of events. After the mutiny was suppressed, the colonial government was taken over by the British Queen from the East India Company. The British developed some transport and irrigation facility in the area. Finally, India gained independence from the colonial government on 15th August 1947.

3

A SURVEY OF ARCHAEOLOGICAL RESEARCH IN THE YAMUNA-HINDON DOAB

The beginning of archaeological studies in the Yamuna-Hindon doab is marked by individual efforts and goes back to two articles written by P.T. Cautley, an irrigation engineer, in 1834. Both these articles titled, *Discovery of an ancient town near Behat in the Doab* and *Further account of the remains of an ancient town at Behat*, were published in the *JASB*, Vol. III, page 43-44 and page 221-27 respectively. In fact, Cautley was the first person to appreciate the broad stratigraphy of an ancient site, *i.e.* Behat in the district Saharanpur. The site is seventeen feet below the present surface of the country and upwards of 25 feet below that of the modern town of Behat. In both articles, Cautley gave considerable significance to the understanding of the location of the site in relation to its contemporary landform. The significance of the site and Cautley's work was further highlighted by James Prinsep's dating of the site in the early centuries AD on the basis of the numismatic evidence. Prinsep wrote an article on the topic titled, *Note on the coins found by Captain Cautley at Behat*, in the same volume of *JASB* (volume III 1834 : 227-28).

However, after 1834, we have almost no references of archaeological studies in the area, till the establishment of the Archaeological Survey of India (ASI) in 1861 under the dynamic leadership of Sir Alexander Cunningham.

The Sir Alexander Cunningham Period 1861-1886

With ASI, the archaeological studies in India was institutionalized and began government sponsored archeological survey. Cunningham had formulated his whole approach to Indian field archaeology much before 1861. In 1848, he wrote of the need of a systematic approach to archaeological studies in which the elucidation of historical geography based on the writings of Chinese pilgrims would be a significant part:

"As Pliny in his *Eastern Geography* follows the route of Alexander, so an inquirer into Indian archaeology should tread in the footsteps of the Chinese pilgrims Hwan Thsang and Fa-Hian" (*JASB*, volume 17 1848 : 535-36).

To begin with, Cunningham argued, this would demonstrate that Brahmanism was not the only paramount religion in India and this knowledge by itself would facilitate the propagation of Christianity in this country. Secondly, "it would show that India had generally been divided into petty chiefships, which had invariably been the case upon every successful invasion; while whenever she had been under one ruler, she had always repelled foreign conquest with determined resolution." (*JRAS*, volume 7 1841 : 240-49). Dilip K. Chakrabarti, in this context, opines, "In other words, Cunningham was trying to justify systematic archaeological exploration of India on the grounds that it would politically help the British rule in India and would lead to an easier acceptance of Christianity in the country." (Chakrabarti 1988 : 44). Dilip K. Chakrabarti further says that to be fair to Cunningham, the political (it would show India to be strong only under one rule, such as the British rule) and religious (it would show Brahmanism to be subject to change, accretions and even replacement by a different religion such as the Christianity) angles of the argument were dropped in his subsequent publication on this topic (Chakrabarti 1988 : 51).

Dilip K. Chakrabarti opines that to understand Cunningham's attitude to field research it is essential to understand few points. First, he was already an explorer in his own right by 1861. Secondly, he had exclusively published on the Indo-Greeks and Bactrians coins and other antiquities which bore strong imprints of Buddhism. Thirdly, the significance of Buddhism itself was not understood properly. Fourthly, an account of the Chinese pilgrims Fa-Hian and Hiuen-Tsang became known to the European scholarship only in this period.

Cunningham's survey is the longest record of archaeological peregrination by an individual in India. Initially he considered the information contained in the *Puranas* as rubbish. Dilip K. Chakrabarti thinks that this could be "due to his justifiable anger with the fact that archaeology was not getting its due share in the scheme of things. But as he got his chance of going to the field in search of the historical remains of India, he was honest enough to acknowledge the role of textual scholarship in the understanding of the sites of ancient India." (Chakrabarti 1988 : 59). He highlights Cunningham's statement in the introduction to the first volume of his Reports: -

"... I beg to be distinctly understood that we field-archaeologists make no claim to more than ordinary scholarship, and that if we have been successful in many of our archaeological researches, we can truly ascribe our success in great measure to the hitherto difficult path having been smoothed by the labours of our great Sanskrit scholars, whose translations have placed within our reach nearly all the chief works of Indian learning." *(Archaeological Survey of India Report*, Vol. I 1871 : XLIII)

In fact, while discussing a particular site, Cunningham takes references of all kinds of sources, such as literary sources and oral traditions. He also looks into folk songs for possible clues and has provided translation of many of the relevant folk songs. The basic points of investigation were laid down in the following order:

(1) the place names and their derivation, (2) the traditional and historical account of the foundation of the explored place, (3) a description of its former extent, and (4) principal buildings, whether standing or in ruins with reference to their material, designs, (5) history, (6) plan etc. special attention was to be given to the inscriptions found associated with architectural examples, fragments of sculptures, "rude and curious agricultural implements", the form and construction of native carts and different types of weights and measures. Cunningham also devised a few chronological groupings of the Hindu and Muslim styles of architecture. The Hindu style was divided into the following chronological divisions: archaic (c. 1000-250 BC; funeral mounds among which the earthern stupas antedated Asoka), Indo-Grecian (250-57 BC; roughly the Mauryan and Post-Mauryan period-examples which "if not the work of Greek artists, show very able imitations of Greek design"), Indo-Scythian period (57 BC-AD 319), Indo-Sassanian period (AD 319-700), medieval Brahmanic (AD 700-1200) and modern Brahmanic (AD 1200-1750). The Muslim style showed the following chronological stages: Ghori-Pathan with overlapping arches (AD 1181 – 1289), Khilji-Pathan with horse-shoe arches (AD 1289-1321), Tughlak Pathan with sloping walls (AD 1321-1450), Afghan with perpendicular walls (AD 1450-1555), Bengali Pathan (AD 1200-1500), Jaunpuri Pathan (AD 1400-1500), early Mogul (AD 1556-1628), and late Mogul (AD 1628-1750). The broad features of each of these divisions were described with reference to their main examples, styles, dates and racial groupings.

Since the scale of Cunningham's work was very comprehensive, his *Reports* are basically site survey reports, which occasionally came down to the level of tour diaries. However, one is overwhelmed by his scholarship – his ability to handle singularly a wide range of subjects, such as numismatics, architecture, sculpture, etc.

Cunningham's Survey in the Yamuna-Hindon doab

1862-63

In this season, Cunningham focused on Delhi. While discussing Indraprastha and five villages that were demanded by the Pandavas, he recognizes the antiquity of Baghpat as one of the five villages.

1863-64

The main focus of this season was between Peshawar and Lahore. However, a few sites were noticed in the area around Kurukshetra and Hardwar. Cunningham noticed the archaeological significance of Mayapur (*Archaeological Survey of India Report*, Vol. II 1871 : 232-234), which is now a ruin between Hardwar and Kankhal. Hwen Thsang calls it *Mo-yu-lo* or Mayura.

1871

Cunningham placed the study of ancient Indian historical geography on a solid footing by his book, the *Ancient Geography of India*, 1871. However, in this book he concentrates mainly on the Buddhist sites, with particular reference to the Travels of Hwen-Thsang. Nevertheless, in his map on "*Travels of Hwen-Thsang in North-West India in A.D-535-637*" given in the book, he does include Sirsawa, Baghpat and Loni among the ancient sites.

1878-79

In this season, Cunningham (*Archaeological Survey of India Report*, Vol. XIV 1882 : 78-85) identified Topra (from where Firoz Shah Tughlak removed an Asokan pillar to Delhi) and Sirsawa. In the context of Kurukshetra, Cunningham gave a map showing all the places associated with the legends of the *Mahabharata* war.

The James Burgess Period 1886-1889

James Burgess succeeded Cunningham as the Director General of ASI in 1886. His period saw great works in the field of documentation of architectural and general antiquarian remains. In 1891, A. Fuhrer (1891) brought out *The Monumental Antiquities and Inscriptions, In The North-Western Provinces and Oudh*. His description of *Mirat* (Meerut) division with references to the districts of Meerut, Ghaziabad, Muzaffarnagar and Saharanpur are of particular interest for any archaeological work on the Yamuna-Hindon doab (Fuhrer 1891 : 1-19). The information given in the work are based partly on "personal knowledge" and partly on accounts published since 1785 A.D., such as *Asiatic Researches*, *Journals of the Asiatic Society of Bengal*, Cunningham's *Archaeological Reports*, the *Corpus Inscriptionum Indicarum*, the *Indian Antiquary* and the *Epigraphia Indica* (Fuhrer 1891 : I). The object of this volume was "not only to produce complete lists so far as known of the antiquities and epigraphs in each district for the use of the Archaeological Survey, but to furnish general information for the guidance of the many residents in these Provinces, with the view of enabling them, if their tastes so incline, to interest themselves in the character and history of the remains in their vicinity" (Fuhrer 1891 : II).

The antiquarian remains that Fuhrer listed include, Ajara in the Tahsil Hapur, Baghpat, Baleni (the name is said to be derived from Valmiki whose *asthana* was in this place when as jungle), Barnawa (there is a little mound to the south of the town, called *Lakha mandap*, which was the scene of the attempt to burn the Pandavas in the house of wax), Ghaziabad, Loni, Mirath (Hastinapur), Muzaffarnagar (great gate of Hastinapur), Raja Karan-Ka-Khera, Bhainswal, Khatauli, Bahat (Behat-Cautley had earlier identified it in 1834, as discussed above. Numerous coins of Indo-Scythic origin with Baktro-Pali inscriptions and other Buddhist remains were also found), Deoband (the Pandavas resided here during their exile), Hardwar (Mayapura was located here), Khizrabad (Topra was located here, and the Asokan pillar now at Firuz Shah Kotla and its inscription has been discussed in Fuhrer's work).

The Period between 1890-1901

One of the major sources of information about the exploration and excavation of archaeological sites starting from the closing decade of the 19th Century are the *Progress Report* of ASI. However, there was not any significant exploration or excavation in the Yamuna-Hindon doab during 1890-1901.

The John Marshall Period 1902-1944

Though John Marshall was directly associated with the ASI only till 1934, Dilip K. Chakrabarti (1988 : 122) calls the period between 1902-1944 as the John Marshall Period because between 1934-1944 there was very little field research and the little work was also a product of John Marshall's planning and direction.

John Marshall concentrated on re-examining some of the Buddhist sites, which had already been partially uncovered, in order to coordinate the results obtained earlier and to check the often "unreliable conclusions" that had been drawn. And then, he proceeded to a fuller examination of one of the city-states of the Buddhist period, *i.e.* Bhita. Bhita was a small and well-defined site, something which could give him experience of handling much larger sites. Next, Marshall concentrated on Taxila in the west and Pataliputra in the east. "Taxila with ruins spread over an area of 25 square miles was a world by itself whereas Pataliputra with its high subsoil water level and the thick covering deposit of the Ganges alluvium was a difficult proposition." (Chakrabarti 1988 : 129) This policy was overtaken by the discovery of Indus civilization. The focus shifted to Indus civilization sites after 1924 and also to Taxila where work went on from 1912 to 1936. But other areas were not totally ignored. In the Archaeological Survey's annual report of 1935-1936, K.A.A. Ansari (1938 : 44-50) reported about 30 sites out of which Saharanpur yielded 20 sites and in general was considered very rich in ancient sites.

The Sir Mortimer Wheeler Period 1944-48

Though during Sir Mortimer Wheeler's Director Generalship of the ASI, there was no significant exploration or excavation work in the Yamuna-Hindon doab, yet his period is remembered with gratitude for bringing Indian archaeology to a modernized phase of research and methodology, building up a new generation of trained Indian archaeologists and employing strategic planning and tactics of filed archaeology. In fact, it was through his planning that the ancient Indian cultures were chronologically linked.

Thus, the potential and importance of archaeology in the Yamuna-Hindon doab was recognized as early as 1834, but no systematic work was undertaken till 1958, when Alamgirpur, on the left bank of the Hindon, was excavated in 1958 under the guidance of Dr. Y. D. Sharma (*IAR* 1958-59 : 50-55). Since then further explorations, mainly by the ASI, have brought to light more than 465 sites in the districts of Meerut, Ghaziabad, Muzaffarnagar, Saharanpur and Bulandshahr, and in east Delhi. However, out of these besides Alamgirpur, only Bargaon (*IAR* 1963-64 : 56-57), Ambkheri

(*IAR* 1963-64 : 56) and Hulas (*IAR* 1978-79 : 60-61) in Saharanpur, Allahapur (*IAR* 1970-71 : 40-41) in Meerut, Kaseri (*IAR* 1969-70 : 43) in Ghaziabad, Mandoli (Babu 1996 : 98-104) in east Delhi and Mandi in Muzaffarnagar (*Puratattva*, 30 1999-2000 : 36-41) have been excavated. These explorations and excavations reveal that the earliest occupation in the Yamuna-Hindon doab belongs to the Late Harappan culture. K. N. Dikshit (1970, 73, 79, 80, 81, 85) has done significant work on the Late Harappan and the Ochre Coloured Ware cultures in the Yamuna-Hindon doab. He explains the process of migration of Harappan people in the western Uttar Pradesh, the ecological advantages of the area, their settlement pattern and what happened to them over a period of time and space.

All these excavations are of small and vertical nature. So far not a single site has been excavated horizontally. This fact limits our knowledge of the cultures of the area. Further, the delay in the publication of excavation and exploration reports affects our understanding. We do not have a clear picture of the pattern of distribution, density and spacing of settlements in different cultural periods and the role of ecological factors in shaping these aspects of cultures. The present work, a study of the settlement history of the Yamuna-Hindon doab, is an attempt to look for the clues that would make the picture clearer. For this purpose, besides using the already published data, intensive explorations were carried out in a limited area, which could be taken to represent the Yamuna-Hindon doab at micro level. Efforts were made to locate all the archaeological settlements in the area and measure their size as accurately as possible. Geographical and ecological settings of the sites were also studied.

4

YAMUNA-HINDON DOAB – A MICRO SETTLEMENT ASSESSMENT

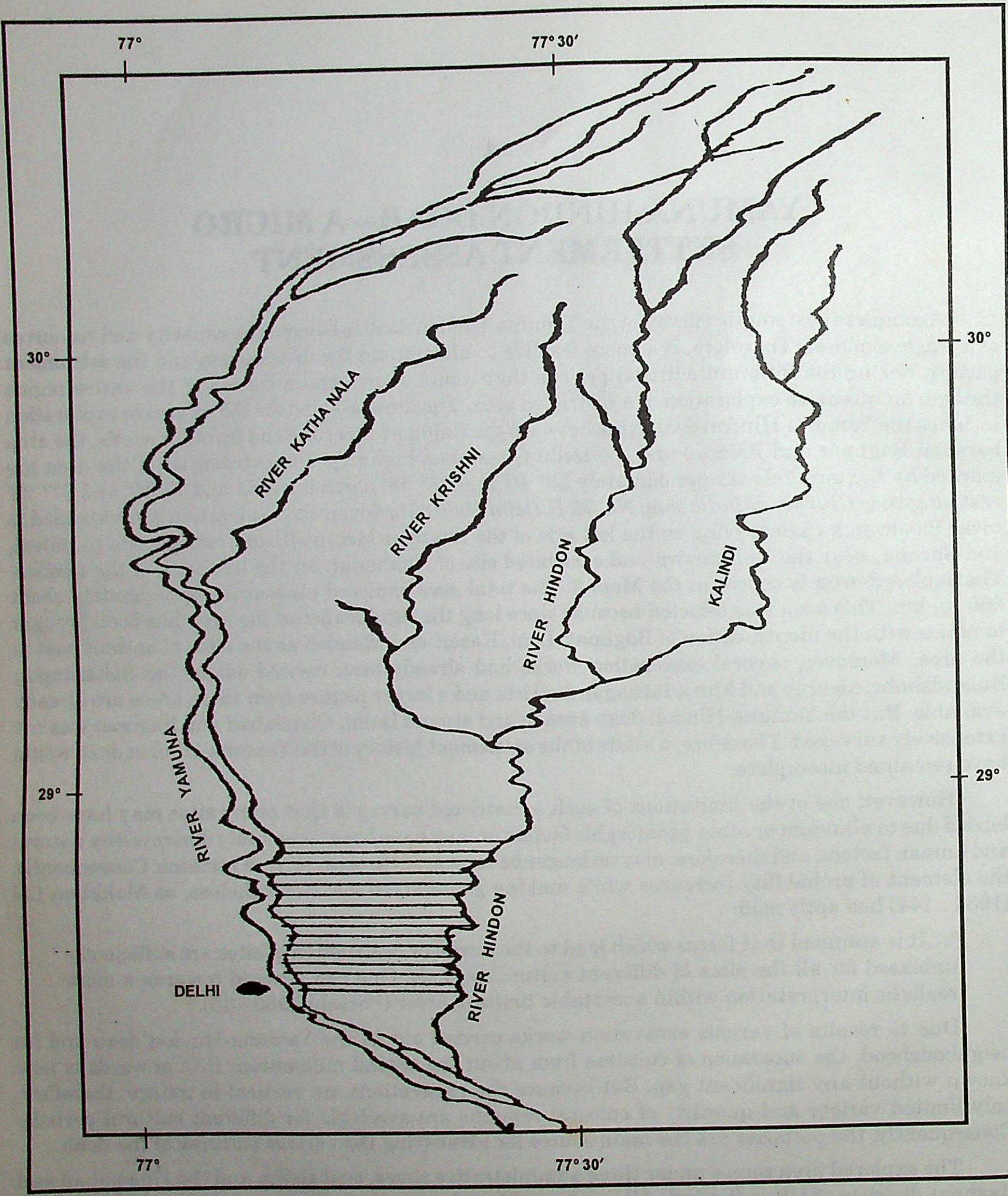
A complete systematic survey of the Yamuna-Hindon doab is beyond the capacity and resources of a single explorer. Therefore, it is more feasible to understand the distribution and the settlement pattern during the different cultural periods that would allow generalization of the entire region through an intensive exploration of a restricted area. The area selected for the intensive exploration includes the Yamuna-Hindon doab lying between the Baghpat-Meerut Road (in other words, the area between Baghpat and Baleni.) and the Delhi-Ghaziabad highway. The extremities of the area are marked by the parallels of approximately 28° 40′ and 28° 58′ north latitude and 77°13′ and 77° 28′ east longitude (*Survey of India map No. 53 H Delhi* 1980). However, the exploration was extended to cover Pasuram ka khera lying on the left side of the Baghpat-Meerut Road, just opposite to Baleni, and Surana, near the well-known and excavated site of Allahapur, on the left bank of the Hindon. The explored area is shown in the Map. 2. The total area explored measures approximately about 600 sq. km. This area was selected because since long the significance of the area has been brought to notice with the identification of Baghpat, Loni, Kaseri and Mandoli as the sites of ancient past in the area. Moreover, several exploration works had already been carried out in the Saharanpur, Bulandshahr, Meerut and Muzaffarnagar districts and a larger picture from these areas are already available. But the Yamuna-Hindon doab area in and around Delhi, Ghaziabad and Baghpat was not extensively surveyed. Therefore, a study of the settlement history of the Yamuna-Hindon doab would have remained incomplete.

However, one of the limitations of such a restricted survey is that many sites may have been buried due to alluvium or other geomorphic factors or may have been completely destroyed by natural and human factors, and therefore, may no longer be recovered through surface remains. Consequently, the element of probability increases while making generalizations. Nevertheless, as Makkhan Lal (1984 : 144) has aptly said:

> "...It is assumed that forces which lead to the burial or destruction of sites are sufficiently unbiased for all the sites of different cultural periods. One can proceed towards a more realistic interpretation within acceptable limits of error (Possehl 1980 : 35)."

Due to results of various excavation works carried out in the Yamuna-Hindon doab and its neighbourhood, the succession of cultures from about the second millennium B.C. onwards is now known without any significant gap. But because the excavations are vertical in nature, therefore, only limited variety and quantity of cultural remains are available for different cultural periods. Consequently, the potteries are the main source for identifying the various cultures of the doab.

The explored area comes under three administrative zones, east Delhi, and the Ghaziabad and Baghpat districts of Uttar Pradesh. From three sides, the area is well connected by metalled roads. In the south, it is connected by the Delhi-Ghaziabad Highway. In the west, the Shahdara-Saharanpur


77°
77° 30′
30°
30°
29°
29°
RIVER KATHA NALA
RIVER KRISHNI
RIVER HINDON
KALINDI
RIVER YAMUNA
RIVER HINDON
DELHI
77°
77° 30′

Map 2

Location of the Field Area on the Map of The Yamuna-Hindon Doab

Road connects the surveyed area. And, in the north, the area is connected by the Baghpat-Meerut Road. However, in the east the area is demarcated by the river Hindon, and, as such, has no metalled road. Within this demarcated area, the villages are well connected with small roads that includes both *kachha* and *pacaa* roads. However, the roads are badly damaged and construction process is carrying on a large scale under the recent programme of the Central Government to link the villages of the country through metalled roads.

An intensive village-to-village survey was carried out. Each village was visited at least thrice to gain the confidence of the villagers and to establish personal relations so that they would come out with more information about their village and its neighbourhood. This was necessary as very often the villagers were reluctant to share the information thinking of me as a representative of the administration. Particularly, the information about discovery of any coins, jewellery, statue etc. During the course of explorations, utmost emphasis was laid on the location of sites and on observing the distribution and settlement pattern of the cultural elements present on them. Since there was no question of excavation, the sites were examined from identifiable and dated surface remains, particularly the ceramic remains, recovered from the surface of the mound, from artificial cuts and from exposure in erosion gullies to obtain information about the thickness of deposit, stratigraphy, cultural sequence and antiquity of the site. The estimation of the size of a site has been made on the basis of the area represented by the distribution of pottery types. At times, significant guidance and cooperation was made by the local villagers who acted as the torchbearer for me by informing about the things discovered from their village and its neighbourhood in the past. This has helped in making probable assumptions about the antiquity of a site even if the once existing mound in that village was destroyed and converted into agricultural land or was destroyed by the neighbouring river. They also provided information about their ancestral roots, reasons for migration, drainage, soil type, vegetation, water sources, crops and other environmental aspects.

On the basis of the distinct pottery types found in the area, following cultural sequence emerges:

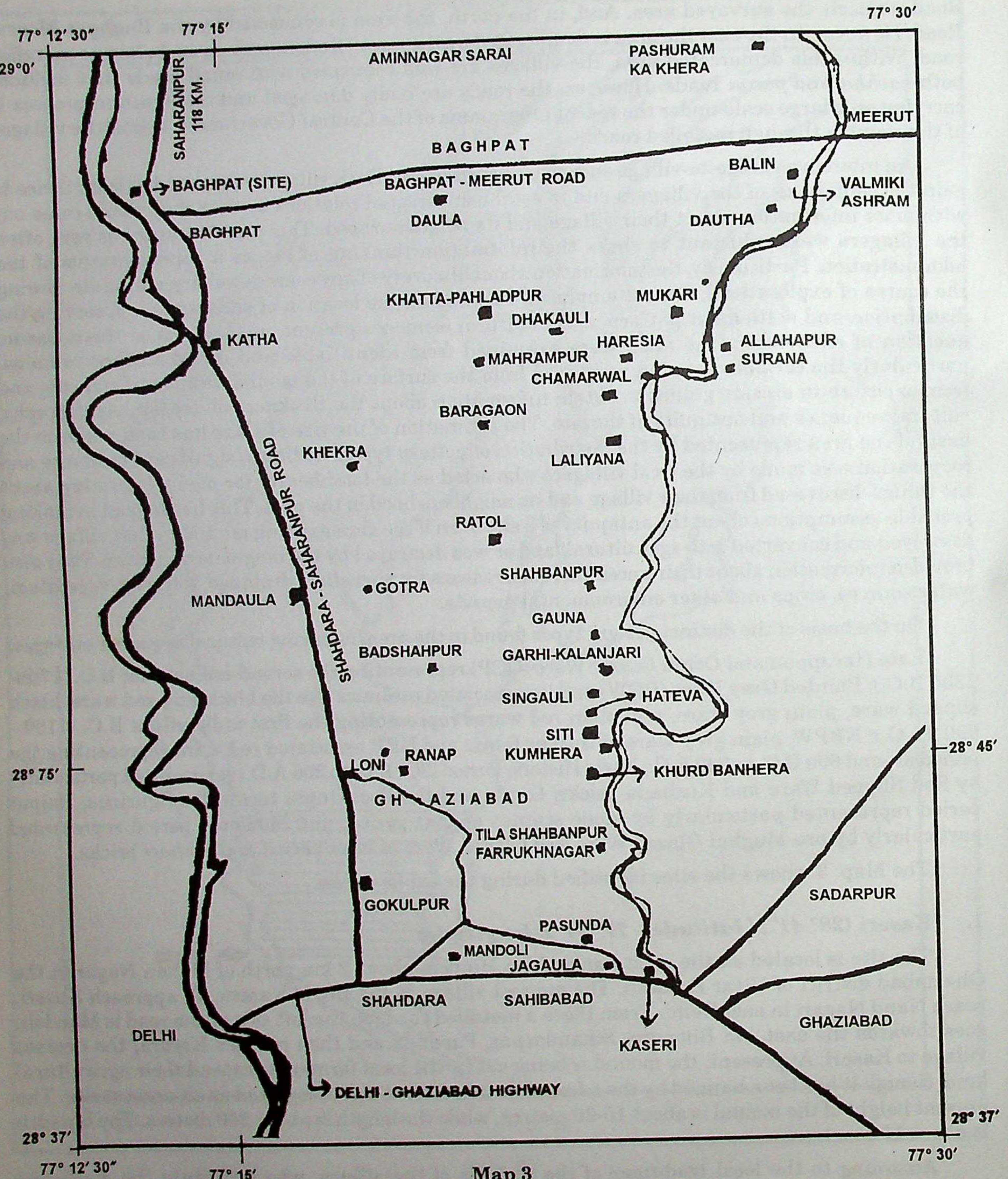
Late Harappan and Ochre Colour Ware (OCP) representing the second millennium B.C. (1700-1200 B.C.); Painted Grey Ware (PGW) and its associated ceramics like the black-and-red ware, black slipped ware, plain grey ware, and plain red wares representing the first millennium B.C. (1100 - 600 B. C.); NBPW, plain grey ware of thicker fabric and NBP associated red ware representing the period around 600 B.C. to 200 B.C.; Early Historic Period (200 B.C. to 300 A.D.) represented particularly by Red Slipped Ware and Kushana bricks; Gupta and the Post-Gupta terracotta figurines, Rajput period represented particularly by stone statues of that period, and Medieval period represented particularly by pre-Mughal Glazed Ware and Glazed Ware of later period and *lakhori* bricks.

The Map. 3. shows the sites identified during the explorations.

1. Kaseri (*28° 41′ N latitude – 77° 24′ E longitude*)

The site is located on the right bank of the Hindon, about 2 km north of Mohan Nagar in the Ghaziabad district of Uttar Pradesh. The nearest village to the site is Karera. To approach Kaseri, reach Nand Nagari in east Delhi. From there a metalled road (on the left side of the road is Mandoli) goes towards the east, *via* Bhopura, Sikandarpur, Pasunda and then reaches Karera, the nearest village to Kaseri. At present, the mound is being cut by the local farmers to extend their agricultural land, though it has been banned by the administration after it was recognized as an ancient site. The present height of the mound is about 15-20 metres, while the length is about 200 metres. The breadth is about 100 metres.

According to the local traditions of the Rajputs of the village, who constitute the dominant caste, earlier the village was settled on Kaseri by a person called Kesar Singh, therefore, they call it


77° 12′ 30″
77° 15′
77° 30′
29°0′
AMINNAGAR SARAI
PASHURAM KA KHERA
SAHARANPUR 118 KM.
MEERUT
BAGHPAT
BALIN
BAGHPAT (SITE)
BAGHPAT - MEERUT ROAD
VALMIKI ASHRAM
DAULA
DAUTHA
BAGHPAT
KHATTA-PAHLADPUR
MUKARI
DHAKAULI
KATHA
HARESIA
ALLAHAPUR
MAHRAMPUR
SURANA
CHAMARWAL
BARAGAON
KHEKRA
LALIYANA
SHAHDARA - SAHARANPUR ROAD
RATOL
SHAHBANPUR
GOTRA
MANDAULA
GAUNA
BADSHAHPUR
GARHI-KALANJARI
SINGAULI
HATEVA
SITI
RANAP
KUMHERA
28° 45′
28° 75′
LONI
KHURD BANHERA
GHAZIABAD
TILA SHAHBANPUR
FARRUKHNAGAR
GOKULPUR
SADARPUR
PASUNDA
MANDOLI
JAGAULA
SHAHDARA
SAHIBABAD
DELHI
GHAZIABAD
KASERI
DELHI - GHAZIABAD HIGHWAY
28° 37′
28° 37′
77° 12′ 30″
77° 15′
77° 30′

Map 3

Location of Sites Mentioned in Micro-Study

Kesari, though in official records it is called as Kaseri. The Rajputs of the village Karera inform that Kesar Singh had come here from Kot Khandela of Rajasthan. He was a Rajput. The Rajputs further informed that the village moved to the present village during Muhammad-bin-Tughlaq's period when Muslims of Loni attacked them. Though now people of almost all castes live in the village, it is basically a Rajput dominated village. Jats, Rajputs and Gujar claim to have a common ancestor. The agricultural land is fertile and all kinds of *kharif* and *rabi* crops could be grown. The villagers have a *bhat* tradition, whereby genealogies of all families are regularly updated. However, the tradition is gradually losing its significance.

M. N. Deshpande (*IAR* 1963-64 : 92) located Kaseri in 1963-64. His finds included Painted Grey Ware and other associated wares. Subsequently, Romila Thapar and K. N. Dikshit excavated (*IAR* 1969-70 : 43) the site in 1969-70. The objectives of the work were two fold:

1. To determine the nature of the earliest habitation at the site, and
2. To establish the relationship with the later cultures of the region lying between the Yamuna and the Hindon.

The excavation revealed 3.5 m thick strata divisible into six cultural periods ranging in date from about 1500 B. C. to the early medieval times.

Period I

In Period I, few potsherds of the Ochre Colour Ware (OCP) showing affinities with similar ware reported from other sites in the Upper Ganga-Yamuna doab were found.

Period II

Period II was characterized by Painted Grey Ware and its associated ceramics like the black-and-red ware, black slipped ware and plain red wares. In the context of the structural remains, an oval-shaped hearth was located. Beads and balls of terracotta were some other finds. According to the excavators, the site was occupied towards the late phase of the PGW culture.

Period III

In period III, not a single sherd of NBP was found. It was characterized by plain grey ware of thicker fabric and its associated miscellany of finds.

Period IV

Period IV was represented by post-NBP red wares assignable to the early centuries of the Christian era along with a few baked bricks having finger marks on them. Similar bricks have been reported from Mandi (Sharma 1999-2000 : 40, footnote).

Period V

Period V was dominated by the Gupta and the Post-Gupta finds. The finds from this period included a terracotta female figurine, perhaps Lakshmi, belonging to the Gupta period. The Post-Gupta pottery included plain red, sometimes with red slip.

Period VI

Period VI was noted for pre-Mughal Glazed Ware and other associated red ware of the time.

Assessment

The excavation report is very poor in the context of the antiquities from the area. This could be because of limited excavation. Also, there is not much published work on the area. During my visit to the site, I noticed that the site is quite large and the mound is well elevated. This gives a picture of it being an important site. During my investigation, I noticed OCP, Painted Grey Ware and its associated ceramics like the black-and-red ware, black slipped ware and plain red wares, plain grey ware of thicker fabric, red wares assignable to the early centuries of the Christian era, and medieval potteries.

Considering that the Period II represents the late phase of PGW and Period III represents the late phase of NBP, T. N. Roy opines that it can be grouped in the same list in which Alamgirpur and Allahapur are included, *i.e.* it is a site where the Iron Age is represented by both Middle (PGW, plus early NBPW) and Late phases (NBPW). Like Alamgirpur and Allahapur, it was also not urbanized during the Later Phase of its occupation and remained a small village settlement (Roy 1986 : 44). He also suggests that Kaseri, together with Alamgirpur and Allahapur were village settlements serving the nearby urban settlements, such as and in particular Hastinapur. He argues that these sites were away from the main trunk route and were not situated on the important rivers (such as the Yamuna) having perennial source of water. Therefore, they remain a rural settlement. (Roy 1983 : 256)

Drawings of some of the potteries recovered from Kaseri are shown in Fig.1a and Fig.1b. Here is a brief description of these potteries:

1. Basin of plain grey ware of thicker fabric, thick rim, showing affinity with the potteries recovered from Period III.
2. Fragment of cylindrical cup, lenticular bottom, slightly inleaning wall, grey ware, fine fabric, showing affinity with the potteries recovered from Period II.
3. Hemispherical cup of red ware, PGW associated, featureless sharp rim (the rim suddenly become sharp at the top), fine fabric, showing affinity with the potteries recovered from Period II.
4. Hemispherical cup of red ware, PGW associated, featureless direct sharp rim, fine fabric, showing affinity with the potteries recovered from Period II.
5. Fragment of cylindrical cup, lenticular bottom, slightly inleaning wall, grey ware, fine fabric, showing affinity with the potteries recovered from Period II.
6. Fragment of a vase of red ware, decorated with an impressed design of chequer-pattern, Medieval Period, Period VI.
7. Medieval pottery, brownish red ware, with flat base, showing affinity with the potteries recovered from Period VI.

2. Mandoli (*28° 42′10″ N latitude – 77° 18′30″ E longitude*)

Mandoli is a small village located on the left bank of the river Yamuna near Nand Nagari in east Delhi, 16 km from Delhi Railway Station on the left side of the Delhi-Ghaziabad highway. During one of the explorations carried out by the Department of Archaeology, Government of the National Capital Territory of Delhi, it was noticed that an ancient mound lies to the south-west of Mandoli. At present, the height of the mound is about 2-3 metres and length is about 25 metres. The breadth is about 15 metres.

The site has been occupied by the present Mandoli village except for the north and north-east portion. According to the local traditions of the Rajputs, Mandoli was once called *Mandav Garh* and was occupied by the Rajputs. These Rajputs trace their roots to Chittorgarh. They informed that during the medieval period, the Muslims forced the Rajputs and Harijans to move towards the west of the village, consequently a new village called Saboli was settled, just adjacent to Mandoli. Most of these Rajputs now live in Saboli. They also inform that still bones, iron objects, ash, coins, walls and

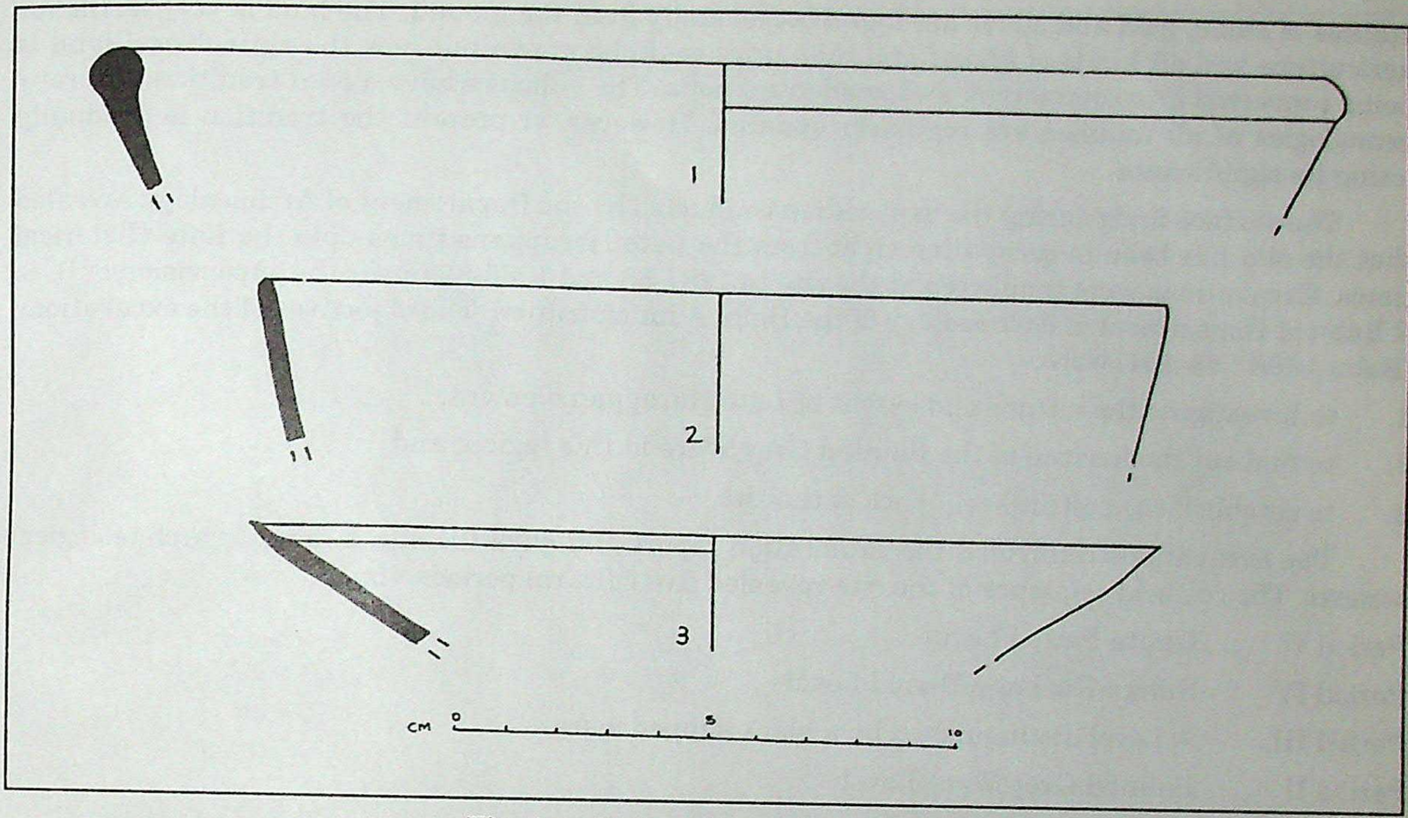


Fig. 1-a : Pottery shapes from Kaseri

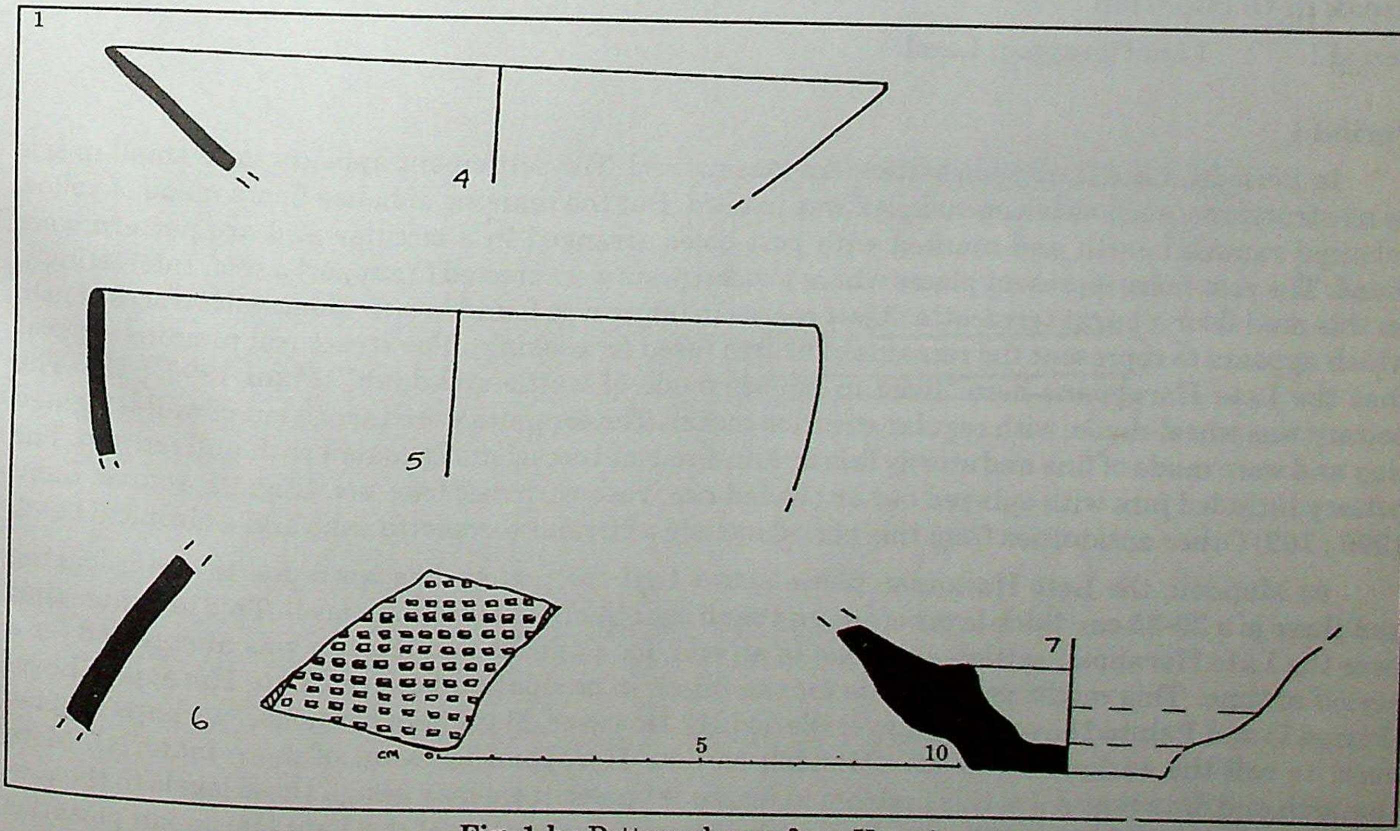

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Fig. 1-b : Pottery shapes from Kaseri

statues of stone, gold and silver are found occasionally from the mound. The land is very fertile for agriculture and all kinds of *kharif* and *rabi* crops could be grown but now the agricultural land is being converted into commercial and residential plots. The villagers have a *bhat* tradition, whereby genealogies of all families are regularly updated. However, at present the tradition is gradually losing its significance.

The surface finds during the exploration conducted by the Department of Archaeology revealed that the site has been in occupation right from the Late Harappans times upto the Late Historical times. Excavations were conducted at the site in 1987-88 and 1988-89 under the supervision of B. S. R Babu of Department of Archaeology of the Delhi Administration. The objectives of the excavations (Babu 1996 : 98-104) were:

1. to investigate the nature and extent of Late Harappan element;
2. to find out the horizon of the Painted Grey Ware in this region; and
3. to establish the cultural sequence of the site.

The excavations confirmed the exploration report and gave the site a definite archaeological context. The cultural sequence of the site revealed five cultural periods viz.

Period V : Gupta Period Level
Period IV : Sunga-Kushana Period Level
Period III : A Level distinguished by a black slipped ware
Period II : Painted Grey Ware Level

Break in Occupation

Period I : Late Harappan Level

Period I

In Period I, Late Harappan settlement was noticed. The settlement appears to be small in size as no structures, such as house-complex was noticed. But the remains of house floors made of yellow coloured rammed earth and marked with post-holes arranged in a circular and arc pattern were found. The post-holes represent places where wooden posts were erected to support a roof. Interestingly, on this mud floor a burnt terracotta object coarse in fabric was found *in situ* along with traces of ash, which appears to represent the remains of hearth (used for cooking). The structural remains suggest that the Late Harappans here "lived in houses made of wattle-and-daub" (Mani 1997 : 23). The pottery was wheel-made, with regular striation marks. The ceramics were turned out of well-levigated clay and were made of fine and sturdy fabric, kiln-fired and occasionally coated with dull red slip. The pottery included jars with splayed out or beaded rim, vase with disc base etc. (Fig. 2a, *source*: Babu 1996 : 102) Other antiquities from this period include a circular terracotta cake and a biconical bead.

At Mandoli, the Late Harappan phase shows that the pottery has worn due to water-logging and there is a 30-35 cm. thick layer of silt and sand over the Late Harappan level. This indicates that here the Late Harappan settlement came to an end due to floods and the site was abandoned for a period of time. This might provide clue for the break in occupation between Late Harappan Level (Period I) and Painted Grey Ware Level (Period II). However, Mani here cautions, "perhaps it is too early to call the earliest levels at....Mandoli as Late Harappan for want of more material. More research and data may solve this problem in future. At present we may assign these levels to the pre-PGW period only." (Mani 1997 : 23). But on the basis of similarities of the Late Harappan potteries

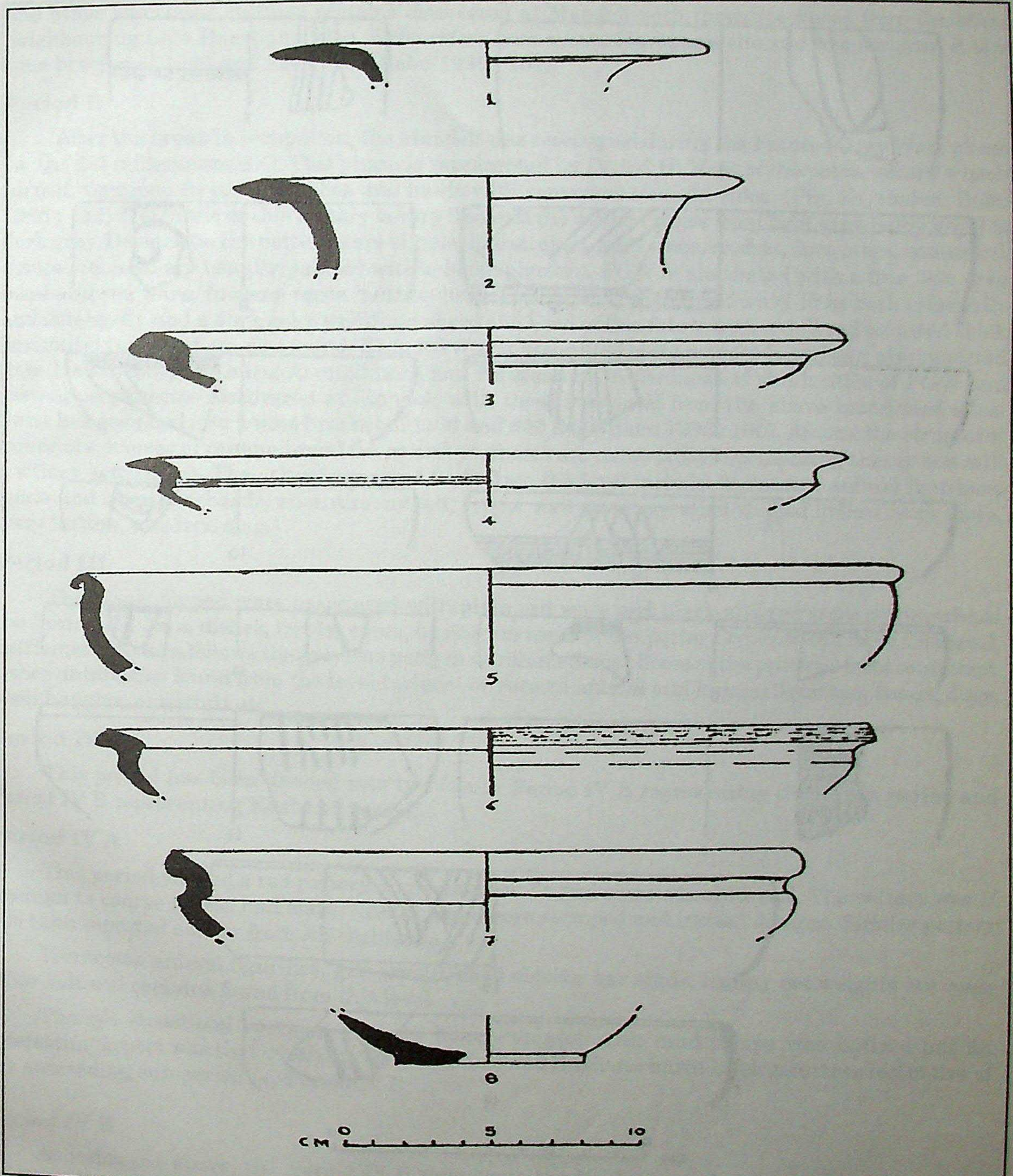
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Fig. 2-a : Pottery shapes from Mandoli

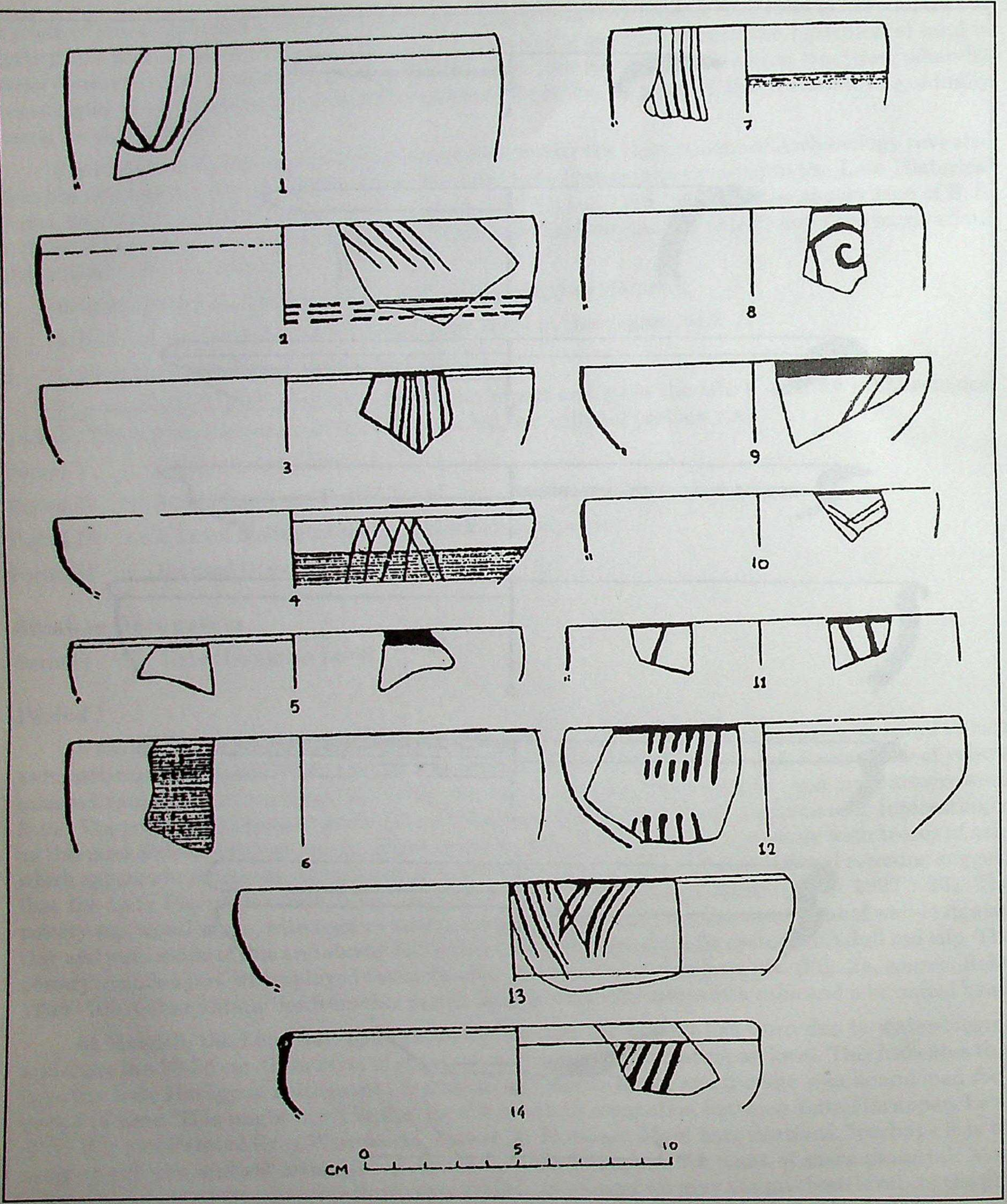
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Fig. 2-b : Pottery shapes from Mandoli

and other associated cultural remains discovered at Mandoli with those recovered from the other neighbouring Late Harappan sites, Babu refers it as a Late Harappan site and has assigned it to a time bracket of 1500 and 1200 B.C. (Babu 1996 : 101).

Period II

After the break in occupation, the Mandoli was reoccupied during the Painted Grey Ware phase *i.e.* the 1st millennium B.C. This phase is represented by Period II. Most of the potteries are wheel-turned. Common forms are dishes and bowls with convex or straight sides. (Fig. 2b, *source*: Babu 1996 : 102) The fabric of this pottery is very fine and the colour ranges from light grey (ashy grey) to dark grey. Designs on the potteries are simple, like strokes, wavy lines, dashes, dots, loops, concentric circles etc., and are usually painted with a black pigment. PGW is associated with a fine thin grey ware and red ware. In some cases, reddish brown colour with a group of wavy lines both internally and externally and a dark ashy well-fired sherd of a bowl of fine fabric with a dull red coloured thick horizontal rim band are also found. Such PGW and associated pottery types have been also reported from Hastinapur, Mathura, Atranjikhera and Kausambi. On the basis of similarities of PGW and associated potteries discovered at Mandoli with those recovered from the above mentioned sites, Babu has assigned it to a time bracket of 1100 and 600 B.C. (Babu 1996 : 100). Among the structural remnants, houses of rammed-mud floors and postholes are noteworthy representing that it was still a village settlement. The other important finds from the level include: terracotta animal figurines, agate and carnelian beads, an antimony rod, copper nail parer, pyramid-shaped hollow ivory piece, ivory button, and iron slag.

Period III

The black slipped ware associated with plain red ware and black-and-red ware distinguishes the Period III. Jars, dishes, bowls, vases, basins are some of the pottery types found from this level. Settlement pattern follows the previous pattern as rammed-mud floors of the previous level continued. Other antiquities found from the level include: terracotta animal and human figurines, beads, discs, shell bangles, ear-studs etc.

Period IV

This period has been divided into two levels: Period IV A representing the Sunga period and Period IV B representing Kushana period.

Period IV A

This period yielded a red pottery, some hand-made and some wheel-turned. The pottery was of medium to coarse fabric, had featureless rim and bore stamped and incised designs. Similar pottery has been reported earlier from Ahichchhatra.

Terracotta animal figurines, gamesman, shell objects, ear studs, fishing net weights are some other cultural remains found from this level.

Though structural vestiges, such as house-complex with mud lumps was noticed but an interesting aspect was that overlying this structure was Kushana burnt brick structure indicative of the succeeding sub-period *i.e.* Period IV B.

Period IV B

As indicated above, the Period IV B represents the Kushana period marked by better-built houses of burnt bricks. A house-complex was noticed made up of bricks measuring 33 × 22 × 6;

31 × 22 × 5; 32 × 21 × 6 cm. Two successively built floors of mud and lime and a hearth were found in one of the rooms of a house. Interestingly, the mud-bricks were noticed underneath the burnt brick structure. Also, copper coins belonging to the reign of the Kushana king Vasudeva II and the rim of a vase bearing Brahmi letters typical of the Kushana period were found. According to Babu (1996 : 100), during this period, Mandoli seems to represent an urban settlement *i.e.* "a prosperous town".

Human and animal figurines made of terracotta, beads of semi-precious stone, shell objects, a terracotta plumbob (a spherical object which suspended from a string, is used to determine the perpendicularity of walls), dabbers, copper rings, and iron objects, such as sickles, arrow-heads, spear-heads are among the other significant finds of this period.

Among the potteries, the significant finds include: carinated *handis* (cooking pots), spouted vessels, spouts and miniature vessels.

Period V

During this period the people using the typical Red Polished Ware and other artifacts of contemporary affiliations, representing the Gupta Period, occupied the mound. Ceramics include red slipped moulded spouts, incurved bowls with flaring sides, etc. A significant find from this level was a well-baked terracotta sealing bearing an inscription in Brahmi characters of the Gupta period decorated with a conch at the top.

Assessment

Mandoli is a significant protohistoric site in the Yamuna-Hindon doab. B. S. R. Babu makes a significant observation while highlighting the importance of Mandoli findings and opines that, "From a study of the distribution pattern of the Late Harappan sites it is clear that there was a large-scale migration of these people from the west towards east resulting in a considerable increase in the number of sites in Haryana and Western Uttar Pradesh. There are about 130 sites in Uttar Pradesh alone spread over Saharanpur, Muzaffarnagar, Meerut and Bulandshahr districts on the river Yamuna and its tributaries. Hence, it can be safely assumed that Mandoli might be one of the settlements that came up during the process of migration from the west. Though there is a large scale expansion of Late Harappan settlements in the Ganga-Yamuna Doab, it may be noticed that most of the Harappan cultural traits disappeared in this phase. The uniformity in the Harappan culture has been diversified in the later stage giving place to a few regional traits. Hence there is gradual transformation, which may be noticed in the settlement pattern and pot-forms during the Late Harappan culture. This aspect can be very well noticed if we study some of the sites like Kaseri, Ambkheri, Alamgirpur, Hulas, Atranjikhera, Bahadrabad etc. and Mandoli should not be taken in isolation, but as one of the centers established during the migratory process" (Babu 1996 : 101). Till the Early Historic period, Mandoli remained a rural settlement. During the Kushana period (Period IV B), Mandoli seems to represent a prosperous town.

Note : One can notice that though the typical NBPW is absent in the region, Period III of Kaseri, represented by a plain grey ware of thicker fabric, and Period III of Mandoli, represented by a level distinguished by a black slipped ware, can be associated with NBPW during our analysis of the various explored sites. Further, as we will see in the next chapter, the NBPW period can also be associated with the presence of some of the basic traits of the NBP assemblage, such as burnt bricks. Also, K. N. Dikshit in his article *The Allahapur Evidence and the Painted Grey Ware Chronology*, (1973 : 148-53) points out that the NBPW in western Uttar Pradesh does not represent a cultural break from the PGW; it appears towards the later phase of the PGW assemblage. Conversely, the PGW continues without any change of frequency even up to the Mauryan levels at Allahapur.

3. Khurd Banhera (*28° 44′ N latitude, 77° 23′ E longitude*)

Khurd Banhera or Banhera is situated on the right bank of the Hindon in the Ghaziabad district of Uttar Pradesh. One can approach Banhera, through Mandoli. A metalled road from Mandoli goes towards the north till Tila Shahbazpur and ends there. From there, a metalled road goes to Loni *via* Banthala on the left side and on the right side it goes to Tila Mod. Turn right to reach Tila Mod and from there turn left to reach Banhera, which is about 3 km away from Tila Mod. Near the village is a Shiv Mandir and a water pipeline that brings Ganga water from Muradnagar in Uttar Pradesh to Gokulpur in east Delhi.

The village Banhera is settled on an ancient mound (Plate I). However, in the past due to sudden deaths on large scale the villagers, considering it as inauspicious, moved down to the peripheries of the mound. But they have been cutting the mound regularly for soil and to extend their household. At present, the height of the mound is about 8-10 metres and length is about 22 metres. The breadth is about 30 metres. The rest of the mound has been cut. Consequently, a large section of the mound is exposed. Looking at the elevation of the village from the neighbouring plains, the length of the mound should be once around 100 metres. On the top of the mound is a very small village shrine, worshipped every evening. This is the reason why the mound is not yet completely destroyed.

Assessment

The villagers inform that they regularly find coins, bones, potsherds, ash etc. the occurrence of coins is so common that most senior and middle-aged villagers inform of finding coins. The villagers showed coins belonging to the medieval period and the British period. A local school teacher informed that he also had a Mauryan coin but he had lost it. The evidences show that the site might have been a town in the past, perhaps from the Mauryan period onwards.

The surface finds recovered during the exploration include PGW, plain grey ware of thicker fabric representing Period III (NBP associated) of Kaseri, Early Historic, Gupta-Post-Gupta and Medieval period. The cultural deposit of PGW and grey ware is substantially thicker than the other cultural deposits. This together with numismatic evidences suggests continuity from PGW period onwards. There seems to be a local trend in the entire study area to give mounds a religious connotation in the form of *Pir's Mazaar* (as in Allahapur, Mukari, Surana etc.) or a village shrine (as in Banhera, Siti etc.) or to proclaim the mounds as Pashuram ka Khera or Valmiki Ashram thereby linking them directly with Hindu mythological figures. The villagers informed that the land is very fertile for agricultural produce and their ancestors settled on this land probably because the Hindon flowed very close to the site, and it was important as a source of water for agricultural and day-to-day use.

Drawings of some of the potteries recovered from Banhera are shown in Fig. 3a and Fig. 3b. Here is a brief description of these potteries:

1. Red ware of thick red slip, internally oval-shaped rim, with rounded sides, fine fabric, Early Historic.
2. Bowl of grey ware with almost straight sides, weakly carinated towards the base, PGW associated.
3. Bowl of grey ware with rounded sides, weakly carinated towards the base, PGW associated.
4. Bowl of grey ware with straight sides, incurved sharp rim, PGW associated.
5. Bowl of red ware with slightly rounded sides and an internally oval-collared rim, PGW associated.
6. Potsherd of brick red ware, with strokes of lines in black pigment, Gupta-Post-Gupta.

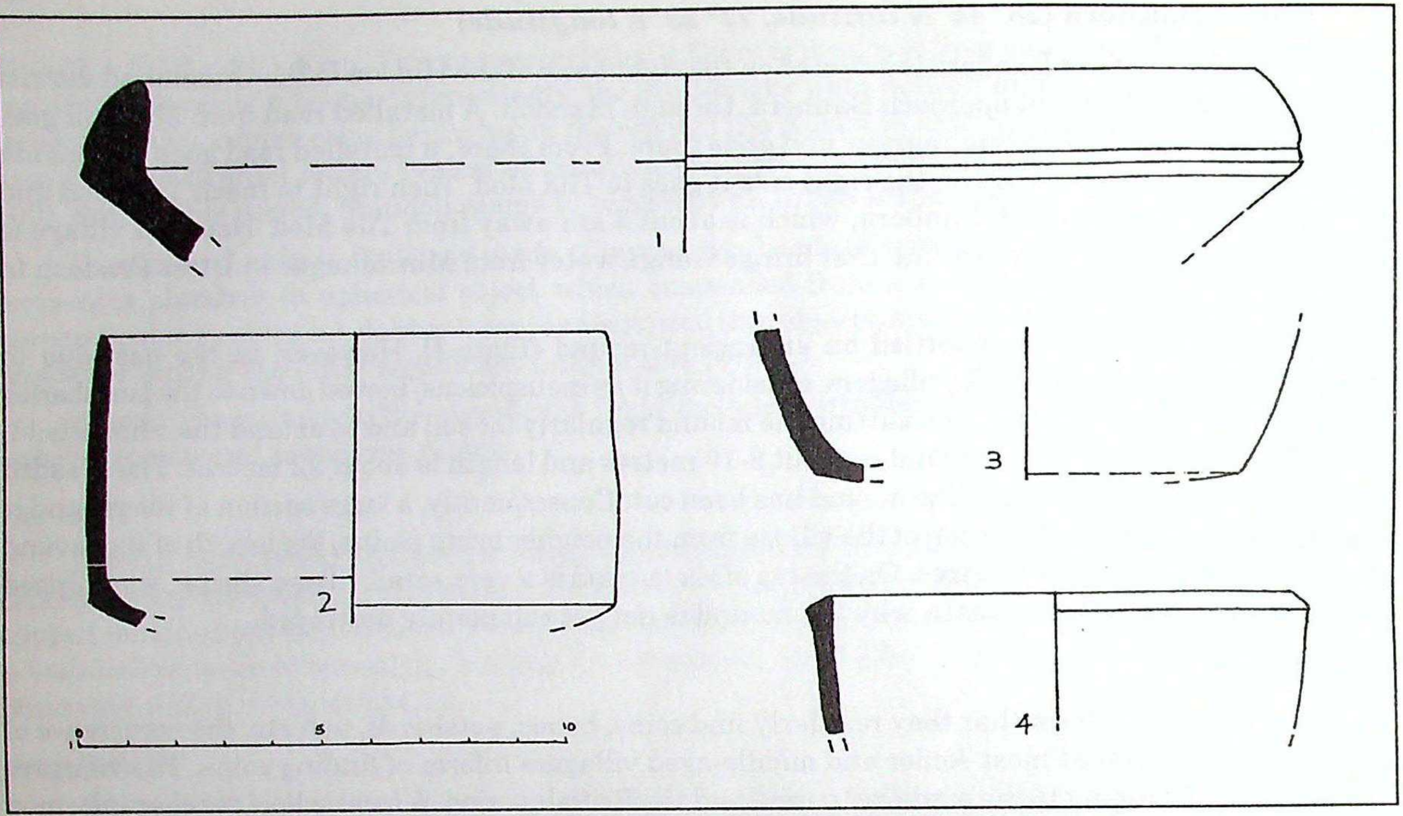

Fig. 3-a : Pottery shapes from Khurd Banhera

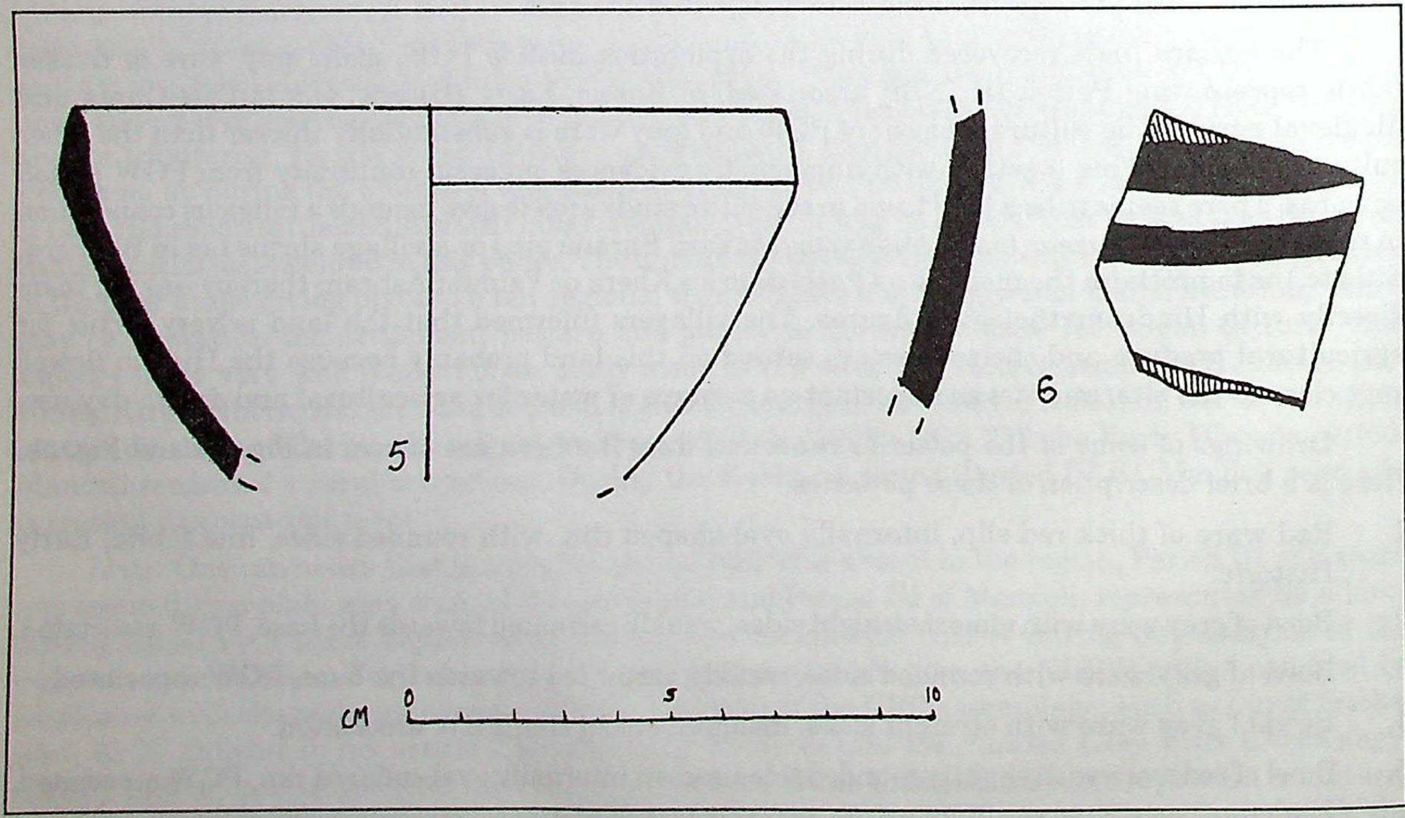

Fig. 3-b : Pottery shapes from Khurd Banhera

4. Siti (*28° 45′ N latitude, 77° 22′ E longitude*)

About 2 km north of Banhera is the village Siti, situated on the right bank of the Hindon in the Ghaziabad district of Uttar Pradesh. To reach Siti, one has to take the Farrukhnagar-Chirori Road. Mid-way, after crossing Mahmunpur, Ristal and Bhupkheri, one can reach Siti. The present village has been recently settled from its original site about 50 years back. The village is very small with a population of merely 500 people. Most of the villagers have left the place for Delhi, Meerut and Ghaziabad. The original village was about 1 km more towards the Hindon but due to destruction caused by the frequent floods and the belief that the population of the village was not increasing because of the site being inauspicious, the villagers moved to the present location. Earlier the area occupied by the present village was their agricultural field. Now, the original mound of the village is being converted into agricultural land on a very mass scale. Within a gap of two weeks, I noticed that a substantial portion of the mound was completely destroyed.

At present, the height of the mound is about 3-5 metres and the length is about 75 metres. The breadth is about 90 metres. There is a *bargad* tree and a hand-pump near the mound. Under the *bargad* tree, there is a shrine of the original village.

Assessment

Since the mound was recently cut, it provided me a good opportunity to collect the artifacts from the area. The potsherds recovered from the site included Late Harappan pottery, such as dish-on-stands, and NBP associated plain grey ware of thicker fabric (Kaseri: Period III), Early Historic, Gupta, Post-Gupta and Medieval potteries. Other important finds from the site include bangles, and beads (Plate II) of terracotta and semi-precious stone (black jasper). The terracotta bead is standard pear-shaped. Similar bead has been reported from Hastinapur, from a late level of Period IV (HST 2-30) (Lal 1954-55 : 93, fig. 32) representing post-NBP phase (early second century B.C. to end of third century A.D.). The bead of black jasper is also standard pear-shaped and seems to belong to Early Historic period itself. A potsherd of plain grey ware of thicker fabric suggests that the site was perhaps under occupation during the NBP phase. Similar potsherds were recovered from the Period III (NBP Phase) during the excavations at Kaseri.

The surface finds recovered during the exploration suggests a break after the Late Harappan period, as no Painted Grey Ware or PGW associated potsherds were found. However, a substantial portion of the mound still remains buried and even the hand pump is about half a metre below the surrounding ground level. The village shrine, which is almost always on an elevated landscape, is also about five metres below the top level of the mound. I believe that the village shrine should be originally on the top of a mound and a substantial size of the mound lies buried, below the ground level. In fact, the top of the mound has become the ground level. Therefore, it would be unjust to say anything with certainty about the absence of PGW. Otherwise after the Late Harappan period, from the NBPW phase onwards there is a cultural continuity.

Drawings of some of the potteries recovered from Siti are shown in Fig.4a, Fig. 4b and Fig. 4c. Here is a brief description of these potteries:

1. Big vase of red ware, with an out-turned thickened drooping rim, of coarse fabric, brownish wash on the surface, Medieval.
2. Vase of red ware, with an out-turned flaring rim, medium-grained fabric, Early Historic.
3. Fragments of dish-on-stand, red ware, medium fabric, Late Harappan.
4. Fragments of dish-on-stand, red ware, medium fabric, Late Harappan.
5. Pottery of dark grey ware, thick fabric, NBP associated (Kaseri: Period III).

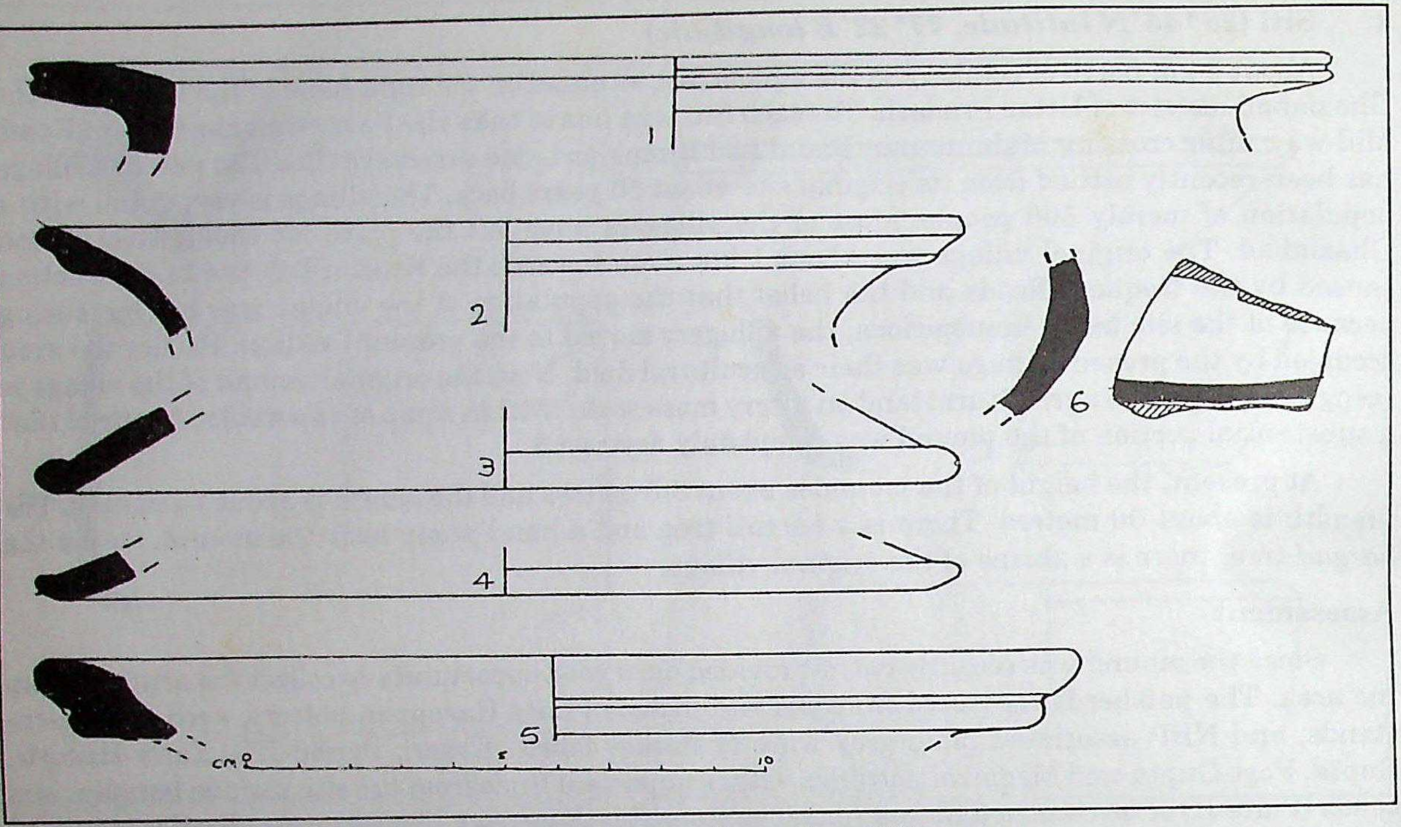
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Fig. 4-a : Pottery shapes from Siti

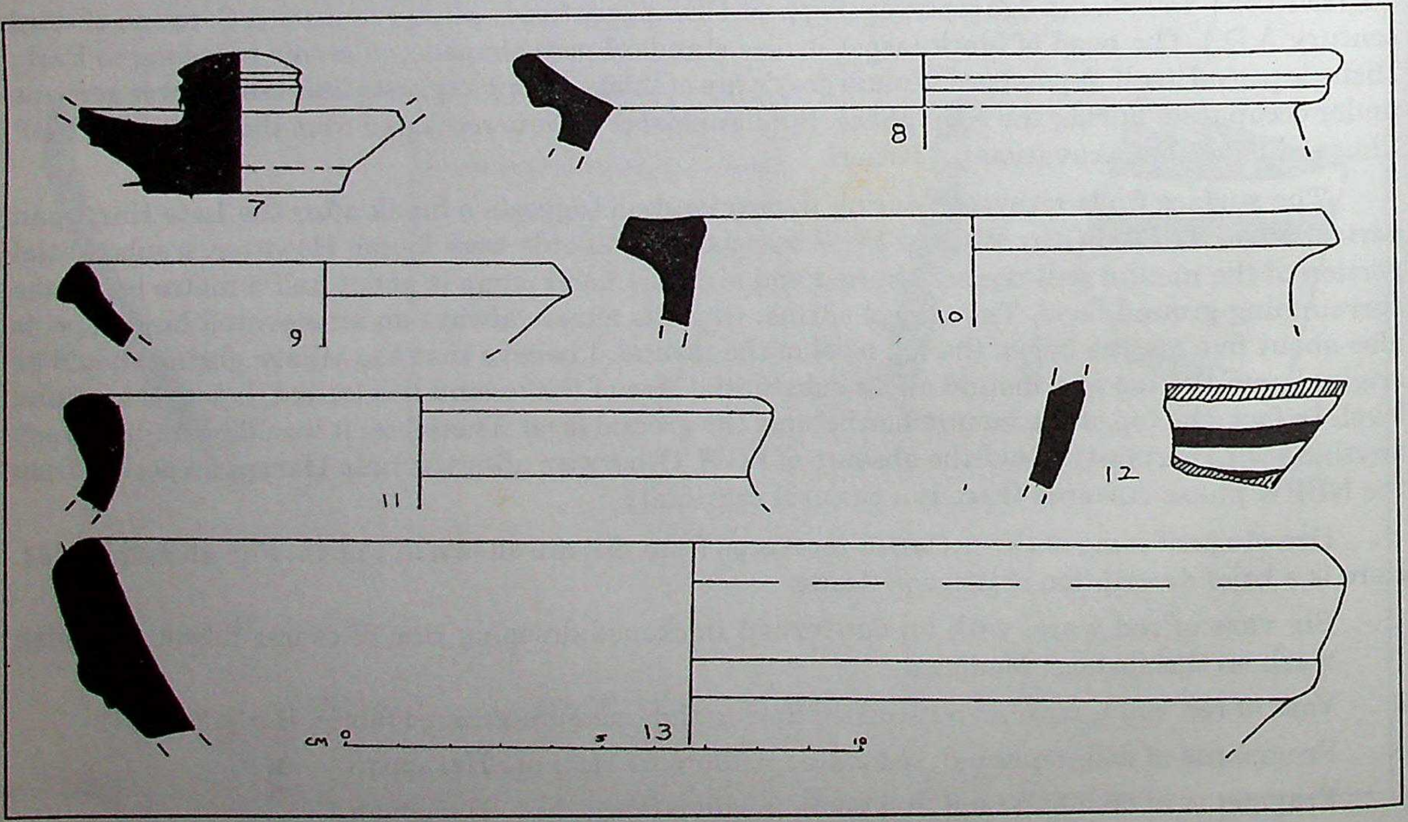
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Fig. 4-b : Pottery shapes from Siti

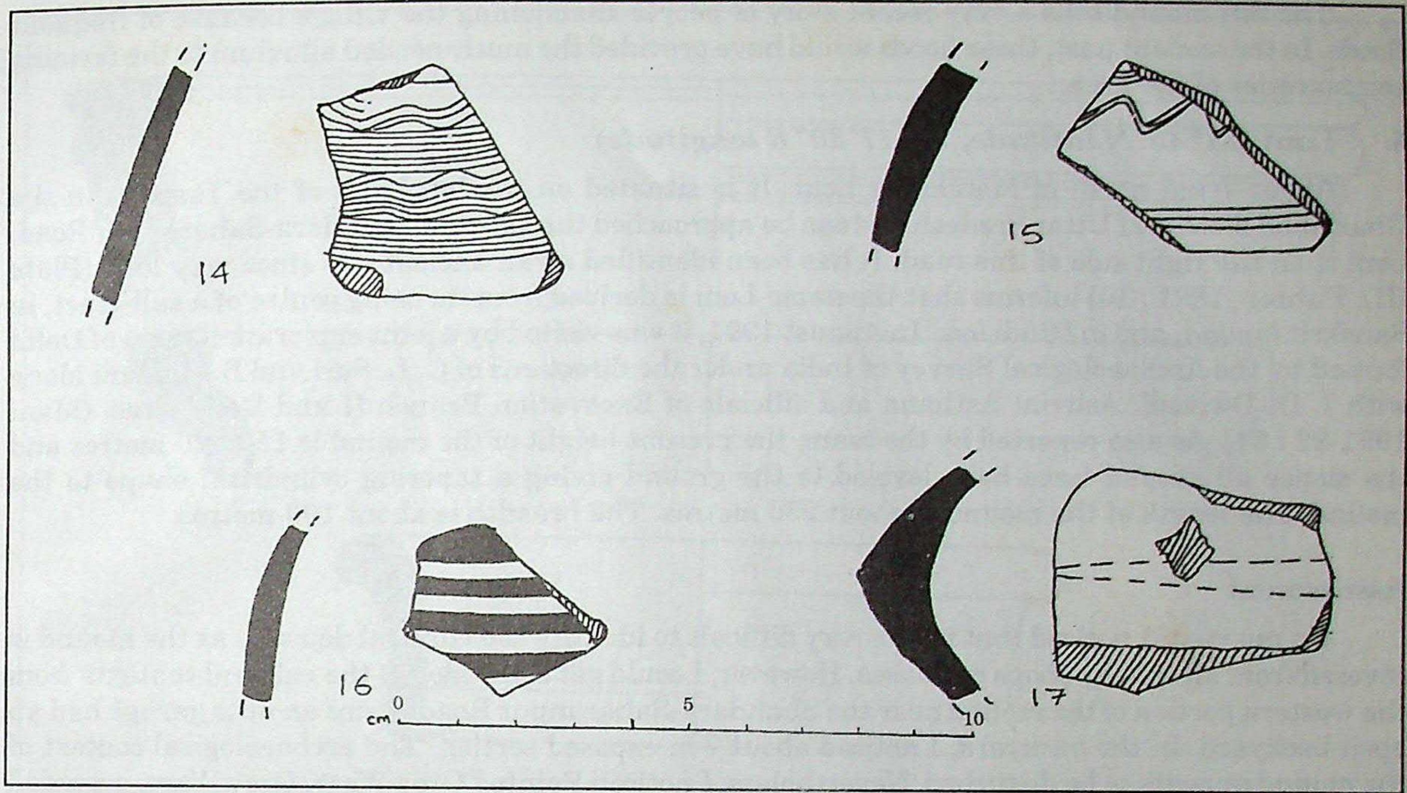

Fig. 4-c : Pottery shapes from Siti

6. Painted red ware potsherd, with stroke in black pigment, Kushana-Gupta.
7. Lid of dull red ware, and a hollow conical knob rising above the rim level, of medium fabric, it is devoid of any slip or wash, Medieval.
8. Pottery of ochre to brick red, banded ground rim, fine fabric, Gupta, Post-Gupta.
9. Miniature red ware bowl, with thin rim, Early Historic.
10. Small carinated jar, recurved neck, bevelled rim, brick red, painted motifs on the rim which are hardly noticeable, Kushana-Gupta.
11. Ochre to brick red ware, out-curved rim, coarse fabric, Gupta, Post-Gupta.
12. Painted red ware potsherd, with stroke in black pigment, Kushana-Gupta.
13. Cooking vessel, carinated, brownish, medium fabric, Medieval.
14. Potsherd of red ware with incised wavy lines on the exterior, medium fabric, dark brown slip, Late Harappan. Similar potteries have been recovered from Bhagwanpura, Sub-Period IA *i.e.* Late Harappan (Joshi 1993: 95).
15. Potsherd of red ware with incised horizontal lines on the exterior, medium fabric, dark brown slip, Late Harappan. Similar potteries have been recovered from Bhagwanpura, Sub-Period IA *i.e.* Late Harappan (Joshi 1993: 95).
16. Painted red ware, executed in black over a bright red ware, medium-grained fabric, Kushana-Gupta.
17. Plain grey ware of thicker fabric, showing affinity with potteries noticed from Period III of Kaseri, *i.e.* the NBP associated.

The Siti mound tells a very recent story of people abandoning the village because of frequent floods. In the ancient past, these floods would have provided the much-needed alluvium to the farming communities of the area.

5. Loni (*28° 45′ N latitude, 77° 17′ 30″ E longitude*)

About 7 km north of Mandoli is Loni. It is situated on the left bank of the Yamuna in the Ghaziabad district of Uttar Pradesh and can be approached through the Shahdara-Saharanpur Road. Loni is on the right side of this road. It has been identified as an ancient site since very long (Plate III). Fuhrer (1891 : 10) informs that the name Loni is derived from its being centre of a salt-tract, in Sanskrit *lavana*, and in Hindi *lon*. In August 1991, it was visited by a joint exploration team of Delhi formed by the Archaeological Survey of India under the directions of C. L. Suri and B. R. Mani along with I. D. Dwivedi, Ashvini Asthana and officials of Excavation Branch II and Delhi circle (Mani 1991-92 : 84). As also reported by the team, the present height of the mound is 15 to 20 metres and the slopes all around have been leveled to the ground giving a tapering cylindrical shape to the mound. The length of the mound is about 250 metres. The breadth is about 100 metres.

Assessment

On my visit, I noticed that it was very difficult to identify the cultural deposits as the mound is covered from all side by shops or houses. However, I could get some idea of the cultural contexts from the western portion of the mound near the Shahdara-Saharanpur Road where an auto garage had an open backyard. In the backyard, I noticed about 7 m exposed section. The archaeological context of the mound appears to be disturbed. Nevertheless, I noticed Painted Grey Ware, Grey Ware, preceded by a phase of waterlogged red ware, followed by early historical potteries and thick deposits of medieval red ware. The joint exploration team of 1991 had noticed a "very thick deposit" of Painted Grey Ware and pieces of black-slipped bowls together with thick deposits of "other cultural periods". One should understand here that in its present disturbed form it is very difficult to ascribe any definite archaeological context to the materials, especially pottery obtained from the site. The gravity of the situation can be understood when some of the villagers informed me that the notice board of the Archaeological Society of India, stating that the mound was a protected site has been removed so that the people can carry out their construction effort. I myself noticed that people were building underground floors and foundations of buildings on the mound. A sincere effort to carry out excavations on the site should be made before we lose every thing to massive construction. This becomes more significant in the light of the fact that the site seems to have been a great centre of trade and administrative activities. The villagers report that they do find potteries and bones while undertaking construction on the site. Further, I was informed that some people get some "*maal*" also, referring to coin hoards and jewelleries. But they could not give more information. But when one sees the mound that looks like a hill, one cannot doubt that Loni was an urban site and hence, in all probability possesses archaeological *maal*.

The surface finds recovered during the exploration include very thick layer of PGW and grey ware, and Early Historic, Gupta-Post-Gupta and Medieval potteries. Mani (1991-92 : 84) has also reported pieces of fine black slipped bowls from the site. This could be compared with the Period III (A Level distinguished by a black slipped ware) of Mandoli. Also, there is a thick layer of PGW and grey ware at Loni. All this suggests continuity in culture from the PGW period onwards.

The fort at Loni is said to date from the time of Prithvi Raja of Delhi in the last quarter of the 12th century. In 1191 A.D. Qutb-ud-din Aibak, the slave General of Muhammad-bin-Sam, invaded the area. Villagers informed that a king called Nunkaran had his fort on Loni. Timur attacked the

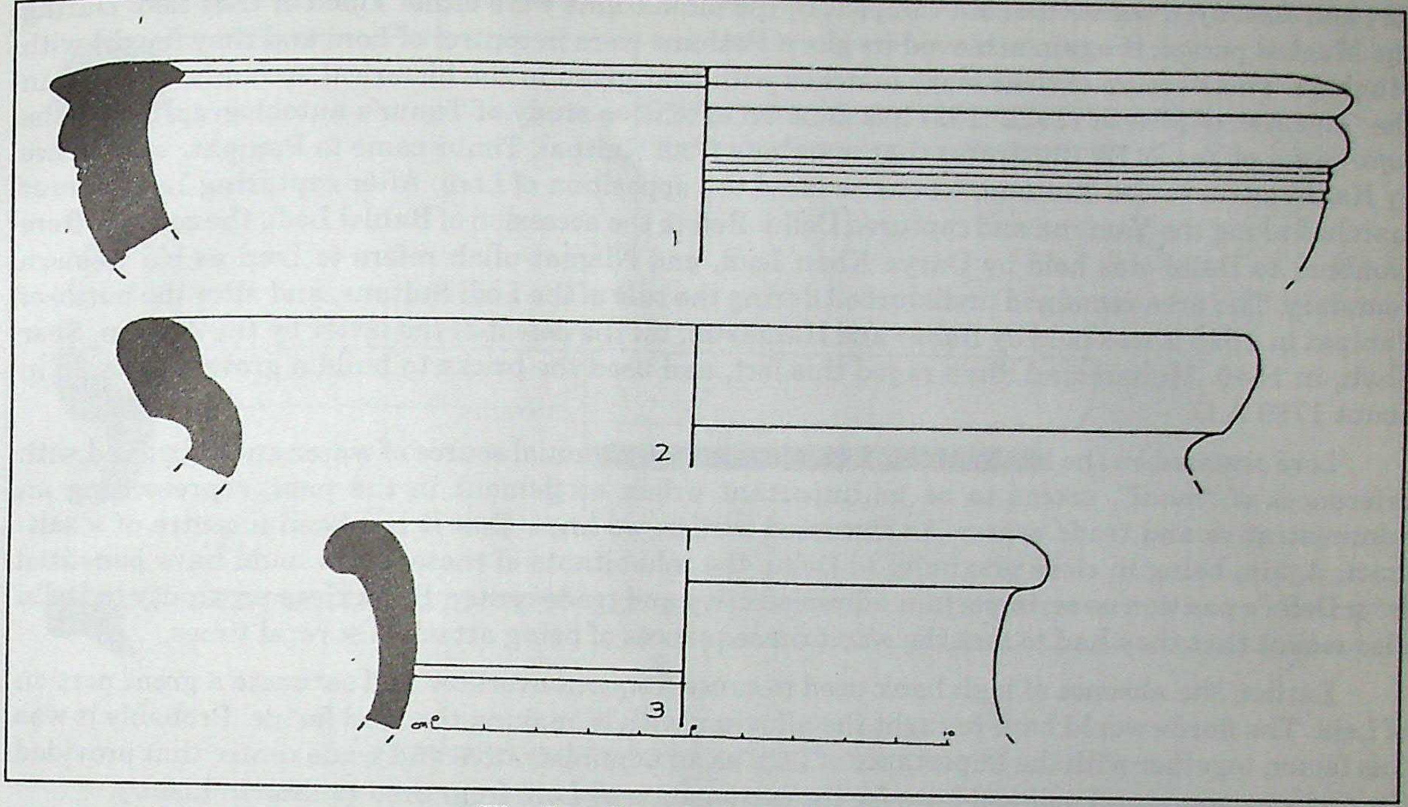

Fig. 5-a : Pottery shapes from Loni

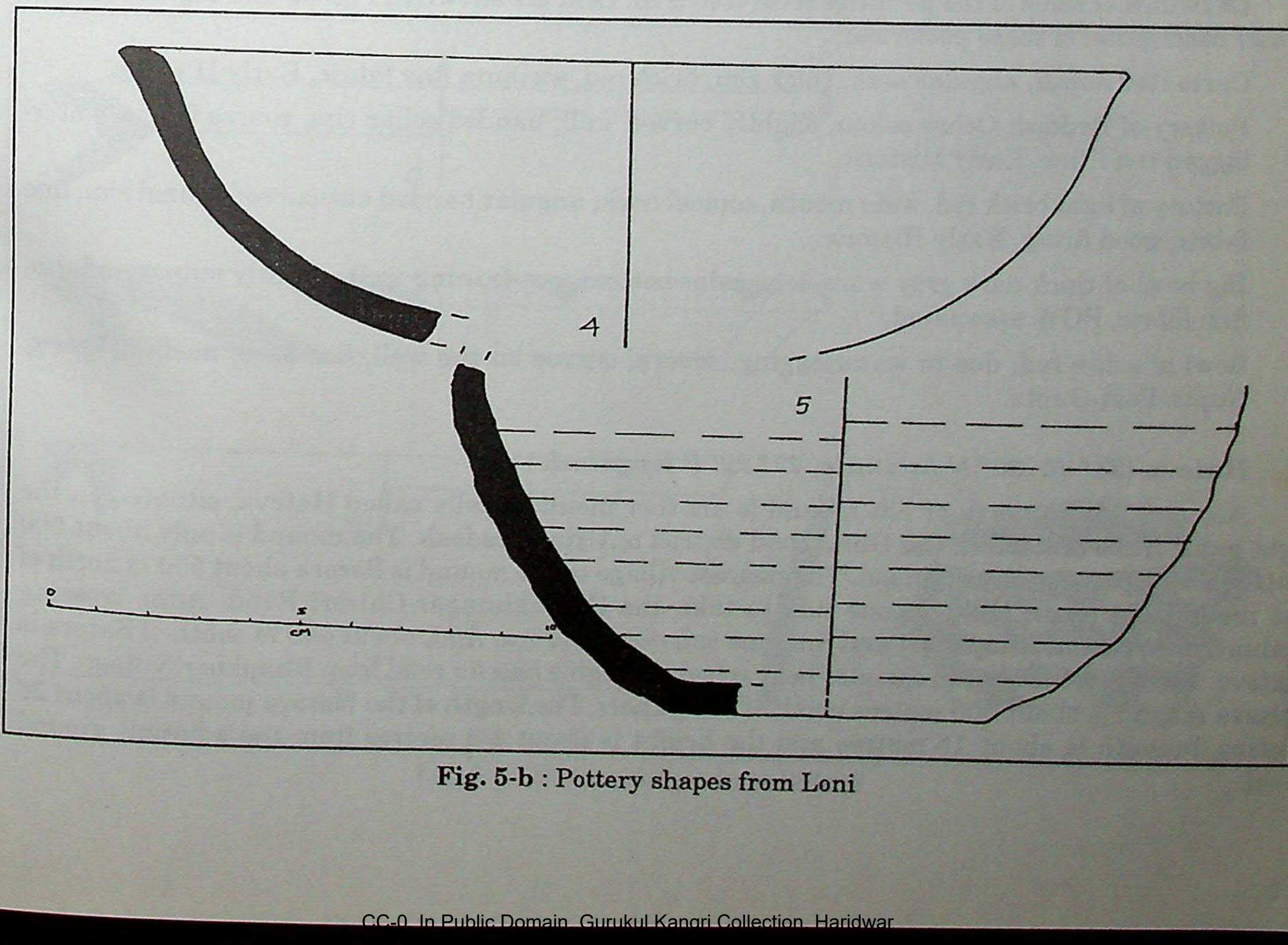

Fig. 5-b : Pottery shapes from Loni

fort and destroyed the settlement completely, the inhabitants were either killed or they fled. During the Mughal period, it again achieved its glory. Pathans were in control of Loni and they fought with Mughals. This version of their story matches with that given in the historical accounts. R. Burn in the *Gazetteer of Meerut* (1922 :152) has done an extensive study of Timur's autobiography and the *zafarnama* of Yazdi. He illustrates that marching from Kaithal, Timur came to Panipat, and thence by Kanhi-gazin to the Yamuna, where he faced the opposition of Loni. After capturing Loni, Timur marched along the Yamuna and captured Delhi. Before the accession of Bahlol Lodi, the country from Sambhal to Delhi was held by Darya Khan Lodi, and Niamat-ullah refers to Loni as his western boundary. The area remained undisturbed during the rule of the Lodi Sultans, and after the battle of Panipat in 1526 it was held by Babar and Humayun, till the defeat of the latter by the Afghan, Sher Shah, in 1540. Muhammad Shah raged this fort, and used the bricks to build a grove and tank, in about 1789 A.D.

Loni situated on the banks of the Yamuna, having perennial source of water and a fort and with references of "*maal*", seems to be an important urban settlement in the past, representing an administrative and trade center. As discussed earlier, we know that it has been a centre of a salt-tract. Again, being in close proximity to Delhi, the inhabitants of these areas could have benefited from Delhi's position as an important administrative and trade center. But a close proximity to Delhi also meant that they had to face the worst consequences of being attacked several times.

Earlier, the absence of high bank used to cause frequent overflow and saturate a great portion of Loni. The floods would have brought the alluvium with it, making the land fertile. Probably it was this factor, together with the importance of Loni as an administrative and trade centre that provided the socio-economic and political base for the settlements at Loni from time to time in history.

Drawings of some of the potteries recovered from Loni are shown in Fig. 5a and Fig. 5b. Here is a brief description of these potteries:

1. Carinated *handi*, angular neck, thick rim, brick red, medium fine fabric, Early Historic.
2. Pottery of Reddish Ochre colour, slightly curved wall, banded collar rim, coarse fabric, water-logged condition, Early Historic.
3. Pottery of light brick red, wide mouth, conical neck, angular banded out-curved funnel rim, fine fabric, good firing, Early Historic.
4. Big bowl of thick dark grey ware, lenticular bottom, out-leaning wall, slightly out-curved rim, fine fabric, PGW associated.
5. Bowl of ochre red, due to waterlogging, several curves on the wall, flat base, medium fabric, Gupta-Post-Gupta.

6. Hateva (*28° 45′ 30″ N latitude, 77° 22′ E longitude*)

About 1-1.5 km north of Siti mound is another mound locally called Hateva, situated on the right bank of the Hindon in the Ghaziabad district of Uttar Pradesh. The mound is only about 500 metres away from the river Hindon. The nearest village to the mound is Sarora about 500 m north of the mound. To reach Hateva, one has to take the Farrukhnagar-Chirori Road. After crossing Mahmunpur, Ristal, Bhupkheri and Siti, one can reach Sarora. And, about 500 m south of Sarora is Hateva. However, the mound can also be reached through a *kaccha* road from Bhupkheri village. The Hateva mound is about 500 metres north of Bhupkheri. The length of the Hateva mound is about 26 metres, breadth is about 15 metres and the height is about 3-4 metres from the adjacent ground level.

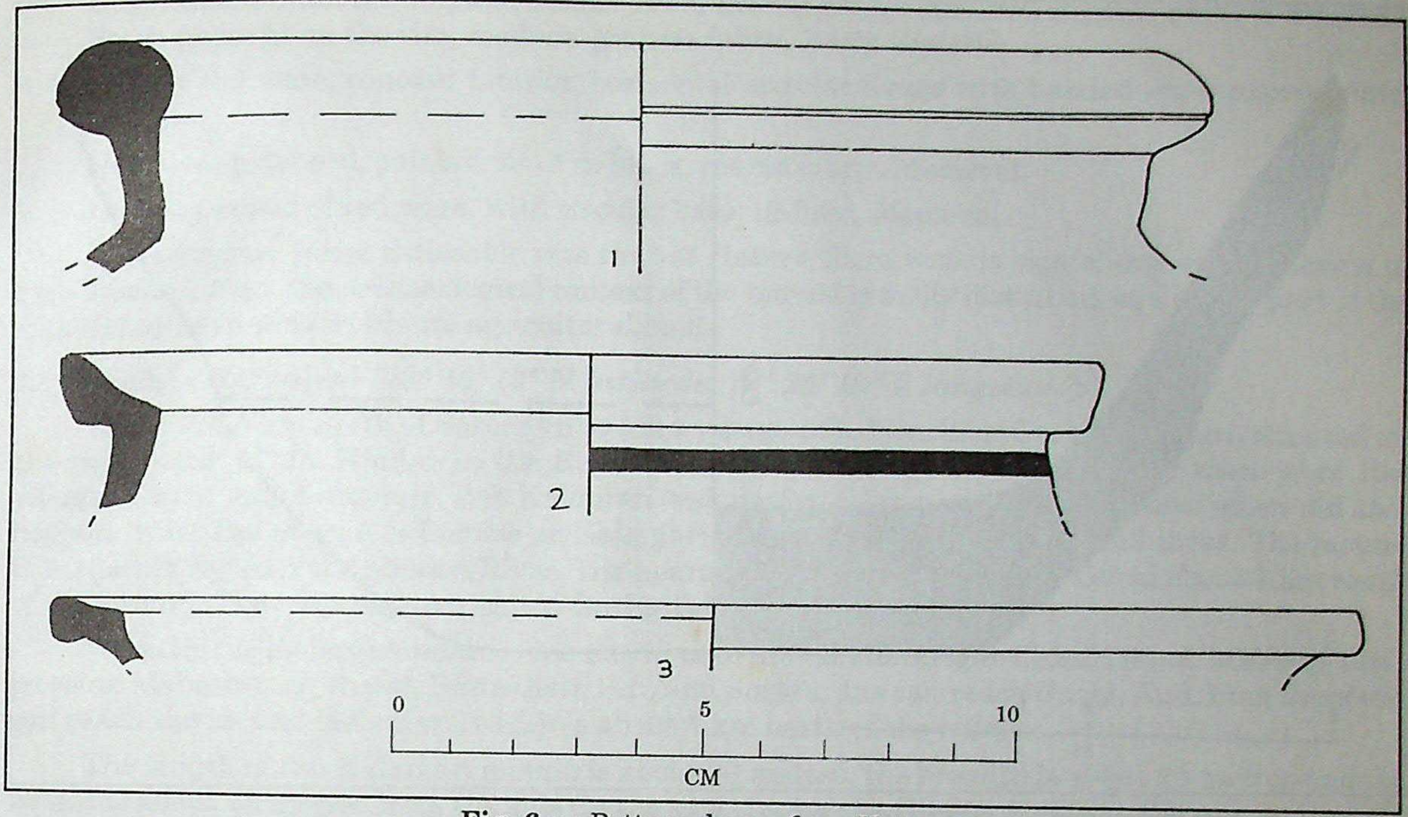

Fig. 6-a : Pottery shapes from Hateva

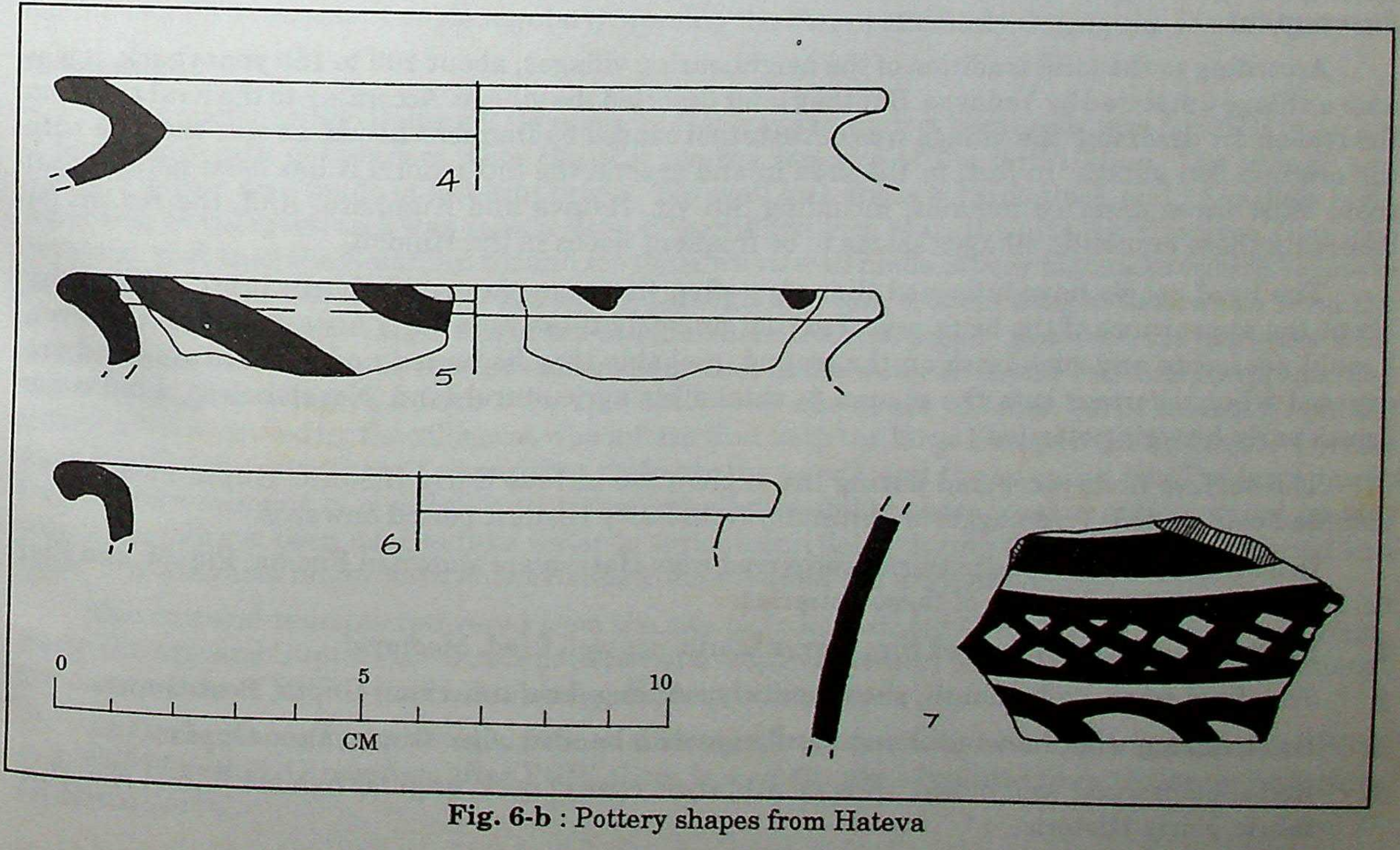
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Fig. 6-b : Pottery shapes from Hateva

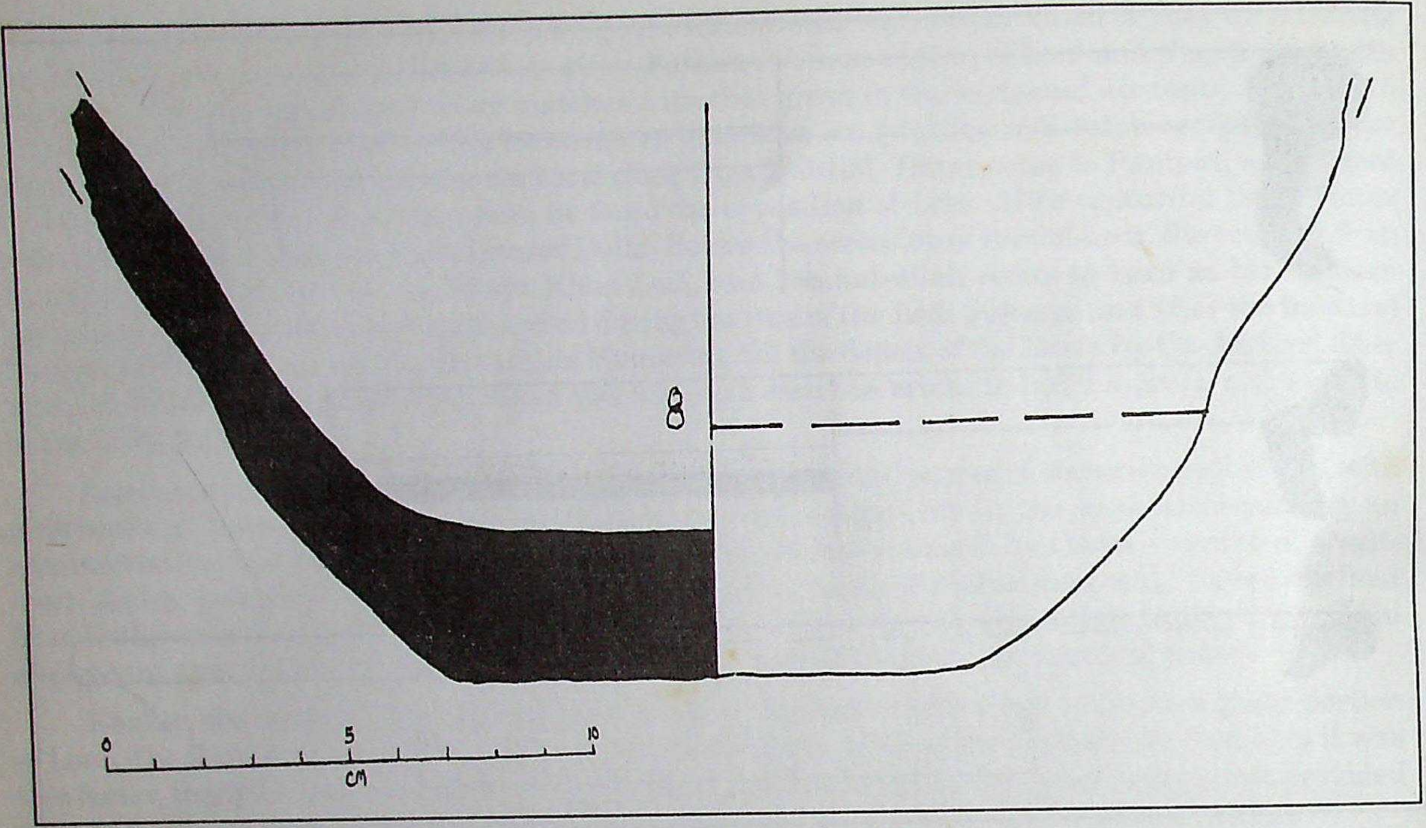

Fig. 6-c : Pottery shapes from Hateva

Assessment

According to the local tradition of the neighbouring villages, about 100 to 150 years back, it was once a village inhabited by Yadavas. But they later deserted the village. According to the local tradition the reason for deserting the village was devastation caused by frequent floods, as was the case with the original Siti village. In fact, in the area in and around the Siti mound it has been noticed that there exist three deserted mounds, including Siti viz. Hateva and Kumhera. And, the reason for deserting these erstwhile villages seems to be frequent floods in the Hindon.

The local people have informed that very often they come across big burnt brick. An enquiry about the appearance of the brick revealed that probably these were early historic bricks. However, I could not locate any such brick on the mound, probably they lie buried under the mound and are exposed when a farmer cuts the mound to extend his agricultural land. Nevertheless, I did come across early historic potteries.

The surface finds recovered during the exploration include Early Historic, Gupta-Post-Gupta and Medieval period. This suggests continuity from Early Historic period onwards.

Drawings of some of the potteries recovered from Hateva are shown in Fig. 6a, Fig. 6b and Fig. 6c. Here is a brief description of these potteries:

1. Red ware, internally curved rim, coarse fabric, not well fired, Medieval.
2. Jar of red ware, wide mouth, short conical neck, angular-funnel rim, Gupta, Post-Gupta.
3. Bowl, flaring wall, horizontal angular flange with banded edge, Gupta, Post-Gupta.
4. Red slipped ware, well baked, wide mouth, short conical neck, angular banded-funnel rim, fine fabric, Early Historic.

5. Carinated, lenticular, angular-funnel neck, flaring ringed rim, red slipped, painted motifs in black pigment on the rim, medium-grained fabric, Early Historic.
6. Vase of red ware, concave interior, horizontal angular flange with banded edge, coarse fabric, Medieval.
7. Red ware potsherd, painted motif in black, coarse fabric, Medieval.
8. Cooking vessel of red ware, with circular base, ill-fired, Medieval.

However, one thing noticeable was that at Hateva there was no sign of any village shrine or *Pir's Mazaar*. Also, the archaeological context of the mound is badly disturbed, as a major part of the mound has been converted into agricultural land.

7. Garhi - Kalanjari (*28° 46′ 10″ N latitude, 77° 22′ 10″ E longitude*)

About 1-1.5 km north of Sarora village is a village called Garhi or Garhi-Kalanjari, situated on the right bank of the Hindon in the Baghpat district of Uttar Pradesh. Actually there were two villages Garhi and Kalanjari. But Kalanjari was deserted long ago; no one knows when did this happen. Now, the mound is famous as Kalanjari while the Garhi village is still there. The mound Kalanjari is right on the Hindon River. The nearest village to the mound is Garhi about 1 km south of the mound. They are together called Garhi-Kalanjari or only Garhi.

To reach the Kalanjari mound, one has to take the Farrukhnagar-Chirori Road. Mid-way, after crossing Mahmunpur, Ristal, Bhupkheri, Siti, and Sarora, one can reach Garhi. And, from there one can reach the mound Kalanjari, which is about 1 km north of the village.

The length of the Kalanjari mound is about 30 metres, the breadth is about 20 metres and the height is about 35 metres from the side (in the east) facing the Hindon and from the centre, towards the west, from the adjoining agricultural fields, the mound is about 6 metres high. On the top of the mound is a *Pir's Mazaar*. People regularly worship the *Pir*, particularly during the Diwali festival.

Assessment

The neighbouring village got its name as *Garhi* meaning fort because it was fortified to secure it from the wrath of invaders. One can still see the remains of the fortification. The village was fortified with a wall made of unburnt bricks. The wall was about 6 yards thick and 18 metres high. According to villagers, this was done to defend the village from Maratha attacks. However, they also point out that near the Kalanjari mound too there was a wall made of very big bricks (which seems to be early historical bricks). Also at Kalanjari, through a *bandh*, a drain used to take water from the river Hindon to Ranap village where the Mughals had their *sikargah*. However, the villagers later destroyed the *bandh* because it was causing an increase in the water level and was thereby threatening the village. The villagers inform that the *bandh* was also made of large burnt bricks. From the information provided by the villagers, who inform that both the large burnt bricks and *lakhori* bricks were used in the structure, it seems that probably the *bandh* and the so called "wall of large burnt bricks" were remains of a same structure and in all probability there was an ancient canal system which might have been used to take water to agricultural fields during the early historic period and later. The Mughals might have only extended and repaired the ancient *bandh*.

The cultural remains recovered from the site include: Painted Grey Ware (PGW), Grey Ware, Early Historic and Gupta, Post-Gupta potteries and medieval *lakhori* bricks. However, over the mound the occurrences of PGW overshadow those of other pottery types.

At Garhi-Kalanjari as per the present evidences there seems to be a break between the PGW and NBPW period. Otherwise, after PGW, there is a continuity of culture from the early historic to medieval period.

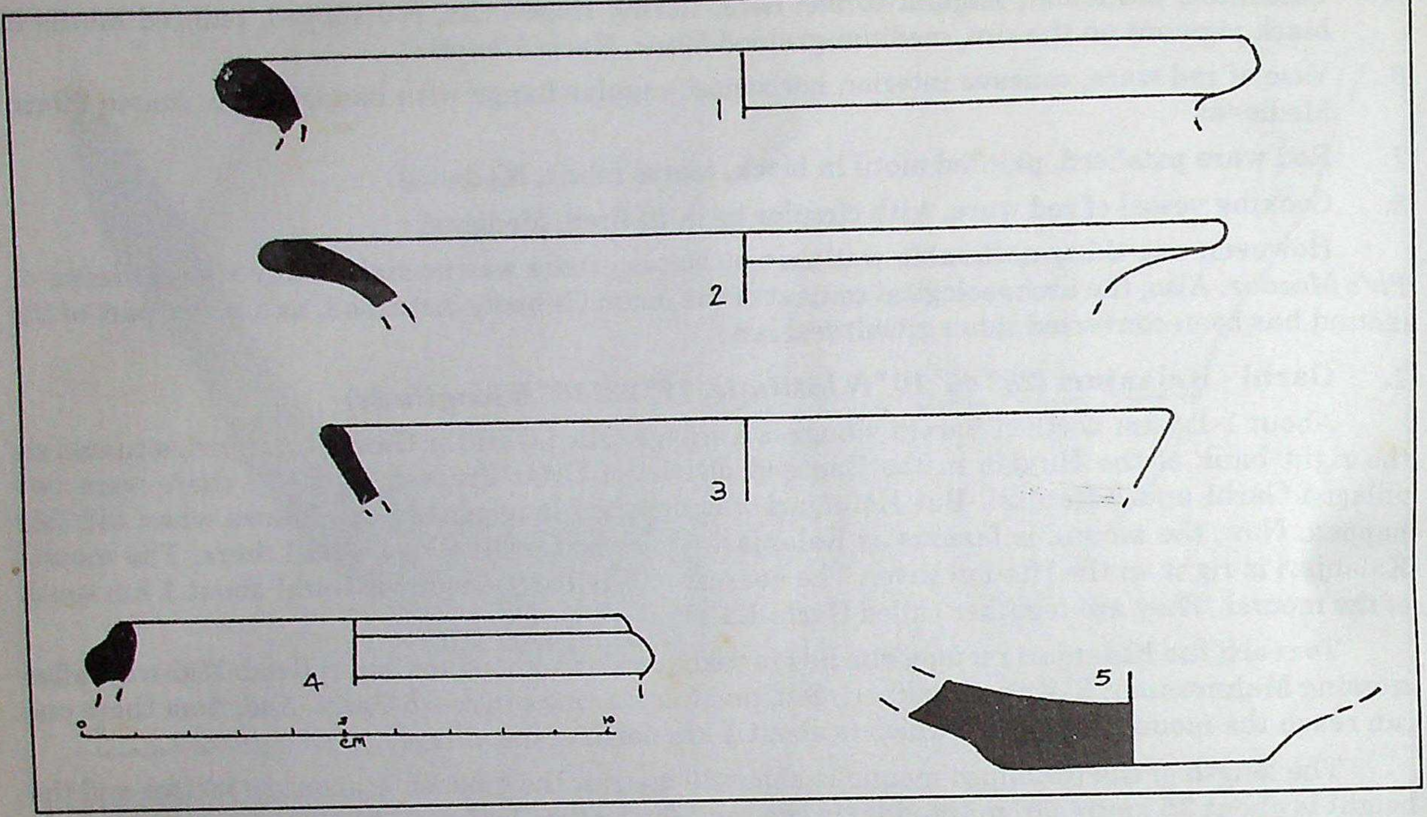

Fig. 7 : Pottery shapes from Kalanjari

The village Garhi itself is a medieval site, as obvious from the remains of medieval fortifications within the village, and the fact that during Mughal period there was a *bandh* to drain water from the Hindon river to the present Ranap village. It must be noted that the Ranap village is also a medieval site, as on my visit I noticed the remains of a medieval *sikargah* in the village built of *lakhori* bricks. Moreover, in the village Garhi there is a Shiv temple, which according to the local tradition is about more than 100 years old.

Drawings of some of the potteries recovered from Kalanjari are shown in Fig. 7. Here is a brief description of these potteries:

1. Vase of red ware, brick red, red-slipped, concave neck, out-curved spherical rim, medium-grained fabric, Early Historic.
2. Red ware, brick red, concave neck, angular flaring out-curved rim, medium-grained fabric, Early Historic.
3. Bowl of grey ware, with featureless sharp rim, slightly in leaning wall, fine fabric, PGW associated.
4. Bowl of grey ware, with a sharp rim, below the rim is a protruding banded circular ring, fine fabric, PGW associated.
5. Ware of light red colour with flat base, Gupta, Post-Gupta.

8. Mukari (*28° 54′ N latitude, 77° 25′ E longitude*)

About 13 km north-east of Garhi-Kalanjari village is a village called Mukari, situated on the right bank of the Hindon in the Baghpat district of Uttar Pradesh. The village is settled entirely on a massive mound (Plate IV). The length of the mound is about 200 metres, the breadth is about 100 metres and the height is about 17 metres. Various sections of the mound are exposed from several sides as villagers cut the mound for soil or to extend their household (Plate V).

But interestingly, there is another mound just adjacent to the Mukari village. On the top of this mound is a *Pir's Mazaar* (Plate VI). The length of the Mukari *Pir* mound is about 40 metres, the breadth is about 20 metres and the height is about 17 metres.

Assessment

The cultural remains recovered from the Mukari village mound include, NBP associated plain grey ware of thicker fabric, early historic potteries, Gupta, Post-Gupta potteries and Medieval potteries. The village also has a medieval mosque. However, no Painted Grey Ware or associated pottery was recovered from the village.

The cultural remains recovered from the Mukari *Pir* mound include, Painted Grey Ware associated plain grey ware of fine fabric, and early historic potteries. However, over the mound the occurrences of PGW overshadow those of other pottery types. One thing is obvious that *Pir's Mazaar* was deserted and the habitation on the Mukari village mound continued. It seems that the settlers initially occupied *Pir's Mazaar* mound and later they shifted to the present Mukari village. Or, probably *Pir's Mazaar* mound was deserted for a period and the new people got settled on the neighbouring area *i.e.* the present Mukari village. Whatever may be the case, it is obvious that both the sites together show a cultural continuity at least from Painted Grey Ware till date.

Drawings of some of the potteries recovered from Mukari *Pir* mound are shown in Fig. 8a. Here is a brief description of these potteries:

1. Bowl of red ware, black on the exterior, rim slightly curved, concave neck, PGW associated.
2. Red ware, brick red, out-curved rim, concave neck, Early Historic.
3. Red ware, with flat base, Early Historic.
4. Black slipped ware, hemispherical cup, sharp rim, PGW associated.
5. Grey ware, hemispherical cup, sharp rim, PGW associated.

Drawings of some of the potteries recovered from Mukari village mound are shown in Fig. 8b, Fig. 8c, Fig. 8d and Fig. 8e. Here is a brief description of these potteries:

1. Red vessel, lenticular lower trunk, up-turned carination, conical shoulder, angular flaring and down curved double-edged and grooved rim, with curved notches, Medieval.
2. Dish-on-stand of thicker grey fabric, NBP associated.
3. Vessel of red ware, concave neck, out-turned rim, medium grained fabric, Gupta, post-Gupta.
4. Big jar, brick red, bulging wall, slightly carinated shoulder, steep angular everted funnel rim, fine fabric, Early Historic.
5. Jar of red ware, high shoulder, recurved neck with broad collar-ledge, bevelled undercut rim, smooth red slip, fine fabric, Early Historic.
6. Jar of red ware, angular out-curved neck, externally grooved, painted with black stripes, fine fabric, Medieval.
7. Bowl of thick grey ware, thick rim, medium-fine fabric, NBP associated.
8. Bowl of red ware with slightly out-curved rim, coarse, Gupta, Post-Gupta.

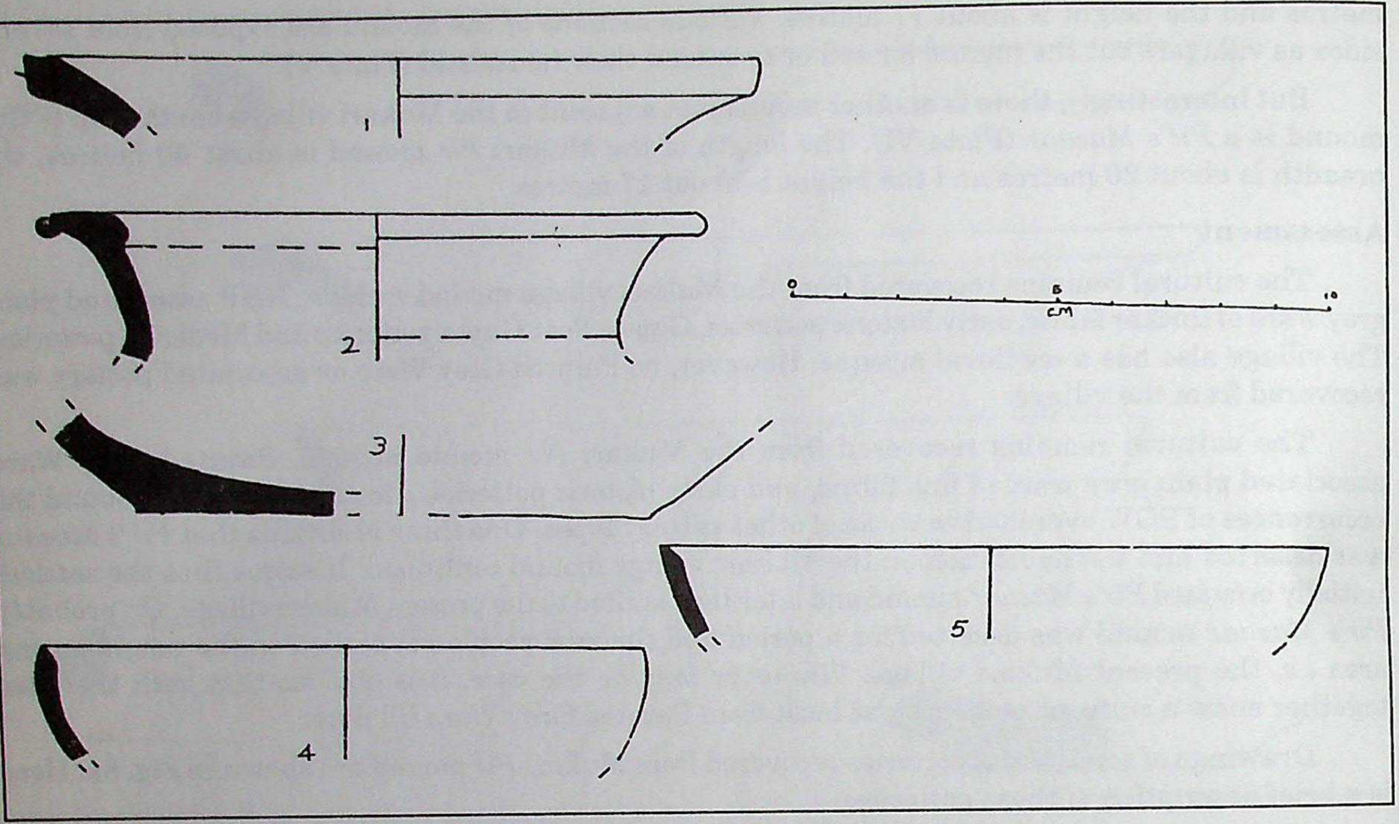
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Fig. 8-a : Pottery shapes from Mukari *Pir*

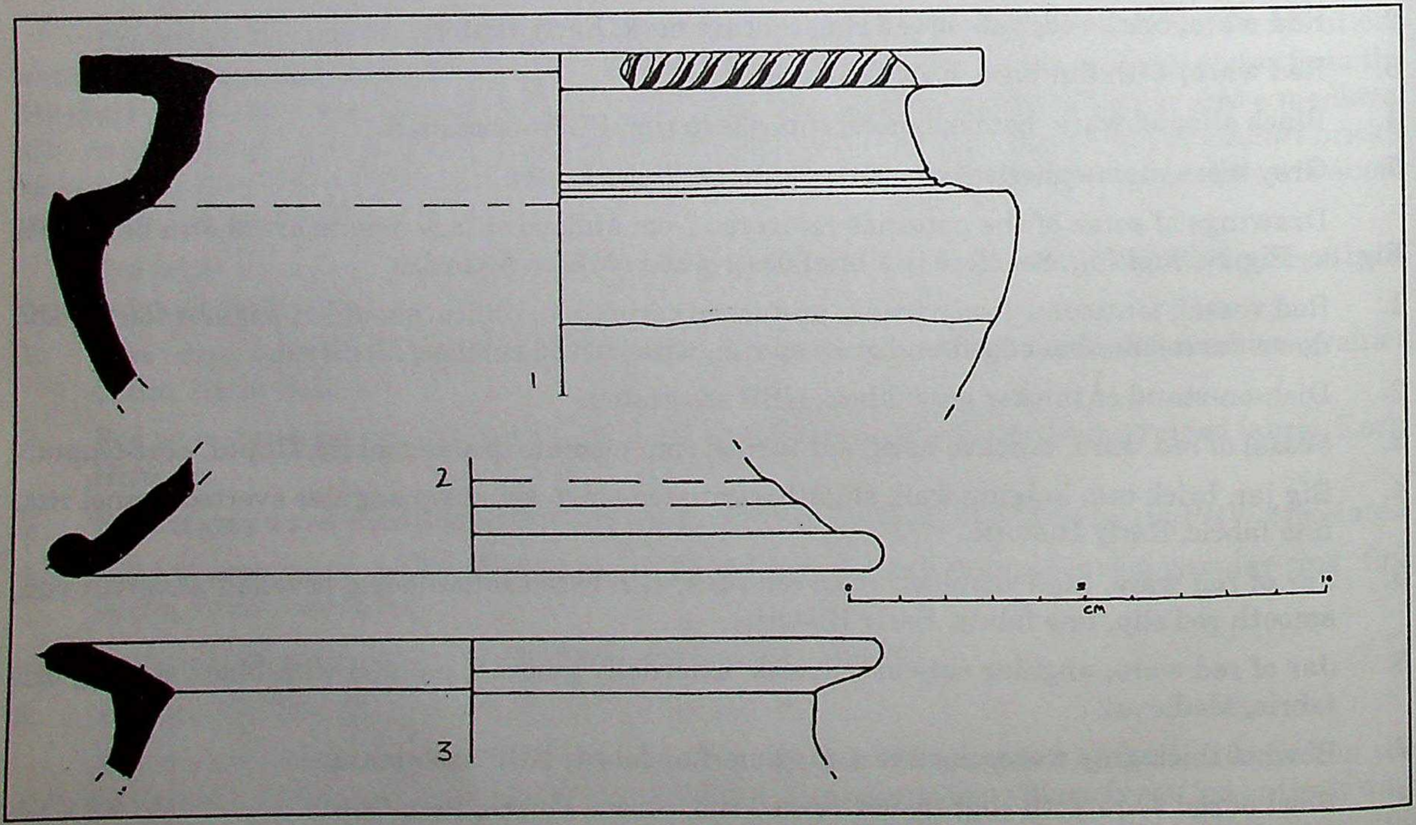

Fig. 8-b : Pottery shapes from Mukari village

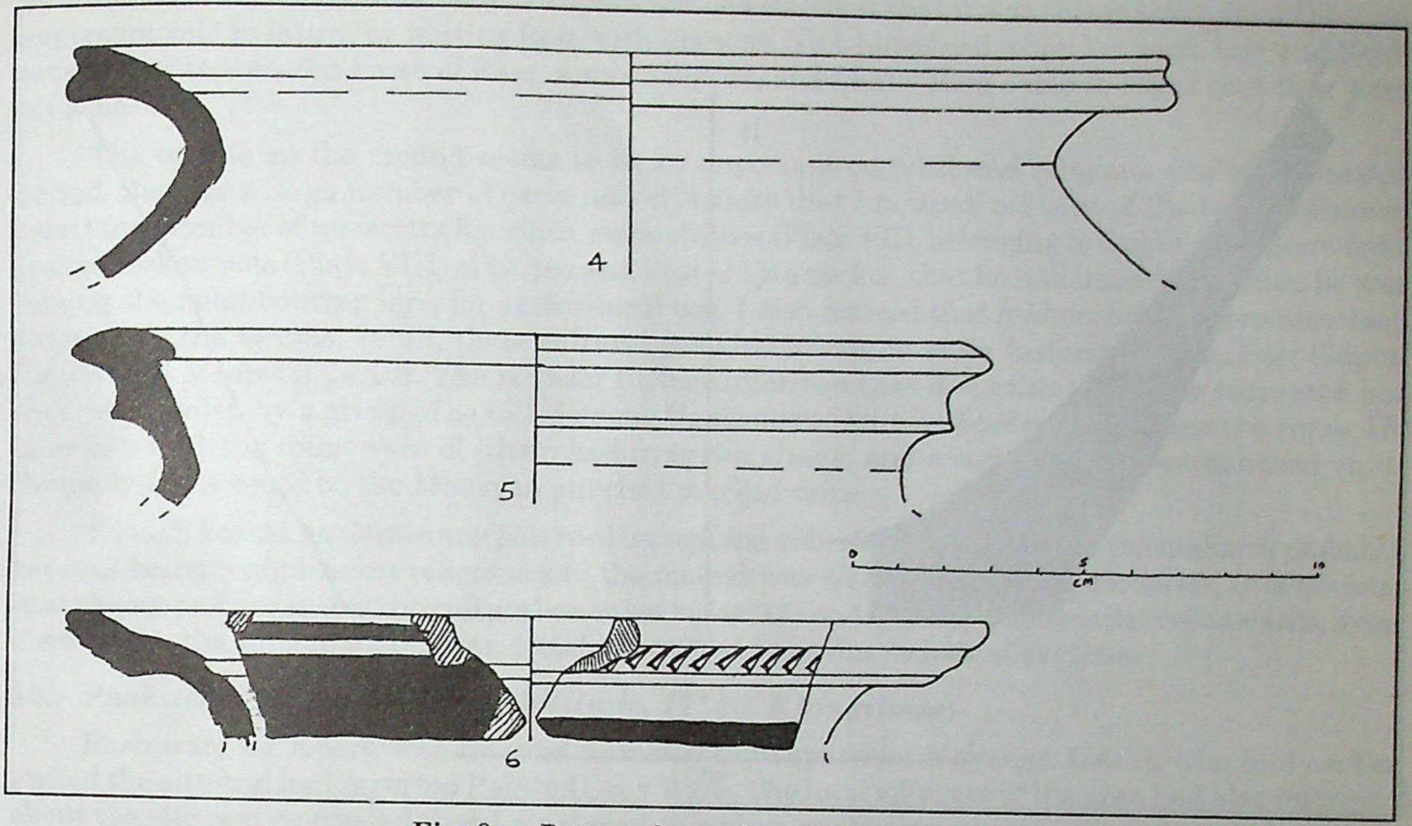

Fig. 8-c : Pottery shapes from Mukari village

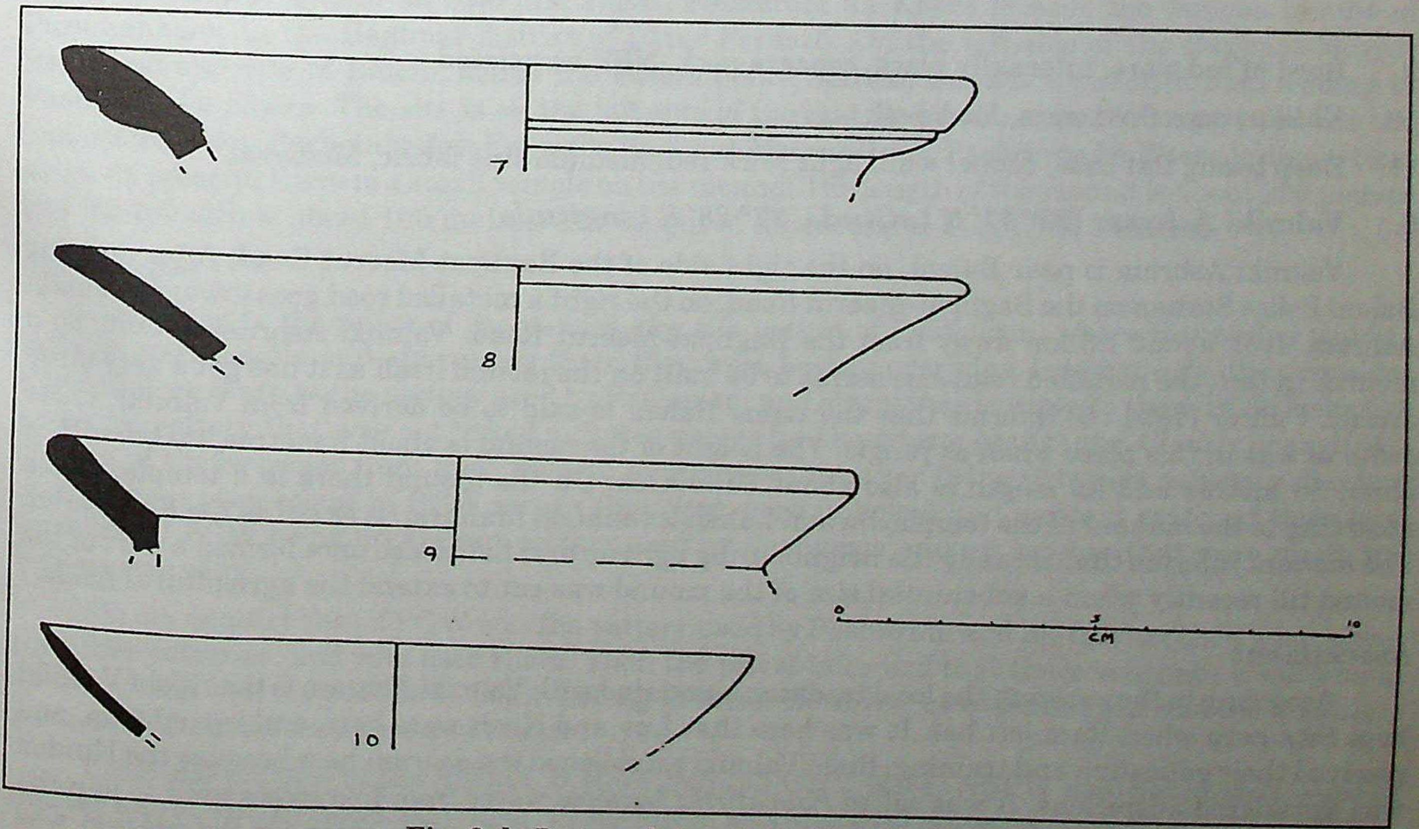
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Fig. 8-d : Pottery shapes from Mukari village

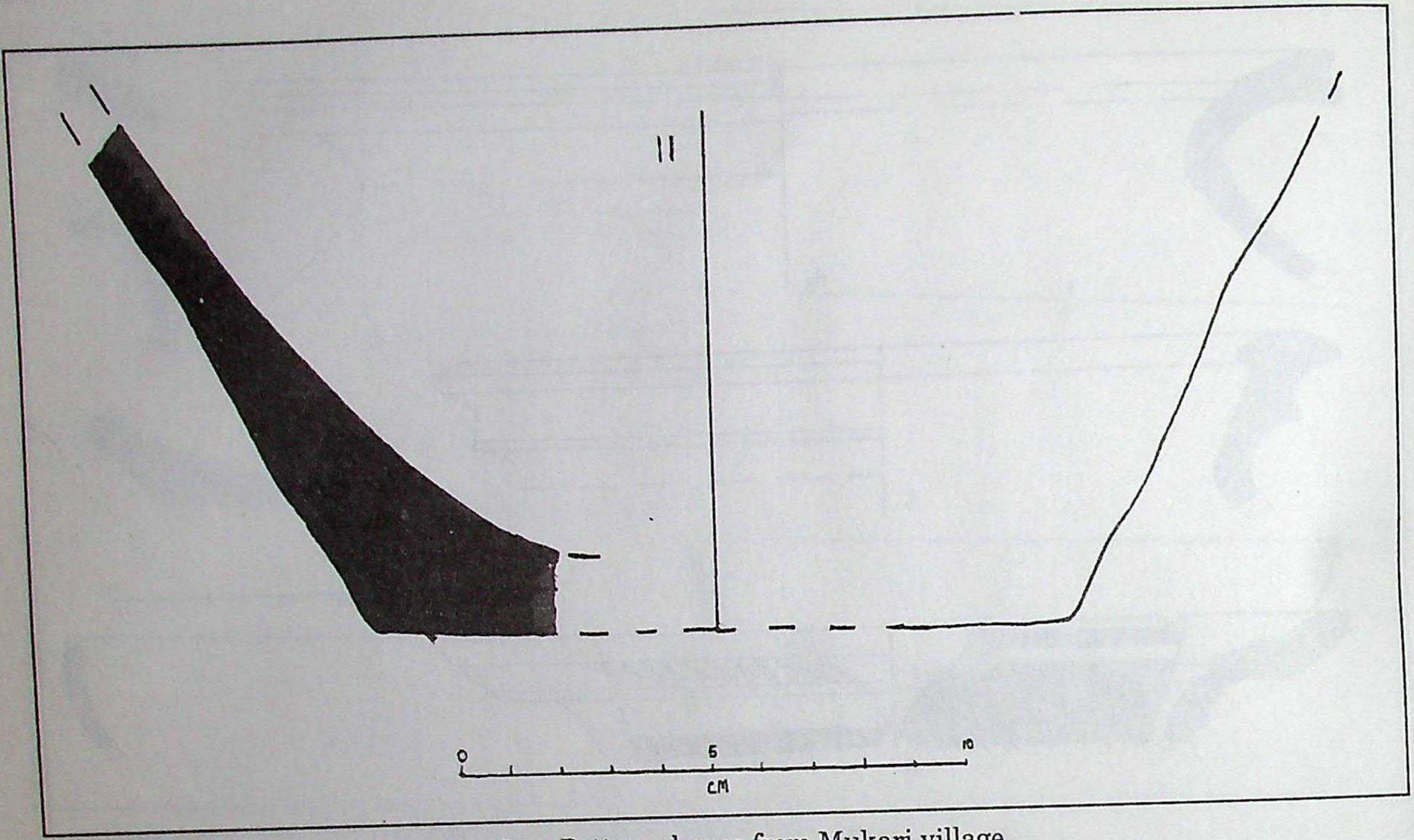

Fig. 8-e : Pottery shapes from Mukari village

9. Bowl of red ware, internally black, concave neck, NBP associated.
10. *Kulhar*, cup of red ware, Medieval.
11. Deep basin, flat base, funnel wall, light brick red, medium-fine fabric, Medieval.

9. Valmiki Ashram (*28° 57′ N latitude, 77° 28′ E longitude*)

Valmiki Ashram is near Baleni, on the right side of the Baghpat-Meerut Road. After crossing Baleni Police Station on the Baghpat-Meerut Road, on the right a metalled road goes towards Valmiki Ashram. It is about 1.5 km away from the Baghpat-Meerut Road. Valmiki Ashram is built on a mound. In fact, the metalled road also seems to be built on the mound itself as it has got a very steep ascent. Fuhrer (1891 : 9) informs that the name Baleni is said to be derived from Valmiki whose *asthana* was in this place when as jungle. The height of the mound is about 5 metres, its breadth is about 50 metres and its length is also about 50 metres. On the mound there is a temple, which according to the *mahant* of the temple, Swami Lakshdevanandji Maharaj, is as old as the *Ramayana*. The *mahant* informs that actually the neighbouring agricultural fields also once formed a part of the mound till recently when a substantial size of the mound was cut to extend the agricultural fields.

Assessment

According to the *mahant,* the local tradition associated with Valmiki Ashram is that Rishi Valmiki kept Sita here when Ram left her. It was here that Luv and Kush were born and brought up, and received their education and training. Rishi Valmiki established the *ashram* here because the Hindon was considered auspicious. It was called *Panchtirthi* because water from five rivers used to join the Hindon. The *mahant* further says that another reason for choosing this place for the *ashram* was that Valmiki considered it safe from *rakshas* and he also knew that it was this place that will play an important role in future by uniting Ram with his sons. This happened when his sons, Luv and Kush caught the *Asvamedha* horse of Ram, a war followed, and finally Ram came to know that they were his sons.

The temple on the mound seems to be an important cultural and religious site since ancient period. Besides a large number of early historic bricks that I noticed, *mahant* of the temple showed me a large number of terracotta figurines, stone statues (Plate VII), belonging to Gupta period onwards, and unbroken pots (Plate VIII) of Gupta and Post-Gupta period, that he had unearthed when he was cutting the neighbouring land for agricultural use. I also noticed that *lakhori* bricks were also used for making the temple. In all, these cultural remains belong to early historic, Gupta, Post-Gupta, Rajput and Medieval period. The *mahant* further informed that five coins were also recovered but they were stolen by a group of so called young "journalists" who had come there to see the coins. He informed that the coins were of silver, had irregular shape, and a script/signs were punched on it. Probably these could be the Mauryan punched marked coins.

Though I could not locate any potsherd (except the unbroken pots shown by the mahant) probably because being a significant religious site the mound was cleaned every day. However, it is obvious that the mound possesses the cultural remains at least from the Early Historic period onwards, even if we ignore the probable Mauryan punched marked coins due to lack of evidence.

10. Pashuram ka Khera (*29° N latitude, 77° 26′ E longitude*)

Pashuram ka Khera was referred to me by my supervisor Nayanjot Lahiri, who had earlier visited the site and had reported Painted Grey Ware. The local villagers of the area had also informed about the site and suggested that I must visit this place as it was a *khera* (a mound) and there were *thikar* (potteries) spread all over the *khera*. Pashuram ka Khera is near the famous temple of Puramahadev, in the Baghpat district of Uttar Pradesh. On the left side of the Baghpat-Meerut Road, just opposite to Baleni, before the Baleni Police Station, there is a metalled road leading to Pashuram ka Khera. The site is on the left side of the metalled road, about 300 metres before the famous temple of Puramahadev. From the Baghpat-Meerut Road, Pashuram ka Khera is about 4 km away. At present, there is a small temple on the mound. The length of the mound is about 200 metres and the breadth is about 100 metres. The height of the mound is about 5 to 7 metres.

Assessment

According to the priest of the mound, the site is that of Pashuram, where his mother used to make potteries daily and after using them they were broken everyday. Interestingly, they consider Painted Grey Ware as the pottery used by Pashuram and his mother because to them PGW looks like a *kachha* pottery that was not baked and was meant for short-term (daily) use. Clearly enough this opinion of theirs comes from their present experience that after firing potteries achieve red colour and to them grey colour of PGW meant that they were unbaked and hence it matched their local tradition of PGW being an ancient pottery used by Pashuram and his mother that were made and broken everyday.

On my enquiry that if PGW was the pottery used by Pashuram and his mother then what about the other potteries, and who used them. Then the priest informed that there was once a settlement on the mound and the potsherds might belong to them. However, he could not tell who these settlers were and when did they deserted the site.

From the surface of the mound, besides Painted Grey Ware, NBPW associated grey ware of thicker fabric, early historical, Gupta, Post-Gupta, and Medieval potteries were found (Plate IX).

A close proximity of Pashuram ka Khera and Valmiki Ashram suggests that the area formed a socio-geographical background of *Ramayana*. Further, it must be noted that close to both these sites are other important sites associated with *Mahabharata*, such as Baghpat, which was one of the five villages asked by Yudhisthira, and Barnawa, where the Pandavas lived in the *Lakha mandap* built by Duryodhana as a conspiracy to kill the Pandavas by burning the *Lakha mandap* which was highly inflammable. Thus, it seems that the Yamuna-Hindon doab was very much part and parcel of the socio-geographical platform on which the epics of *Ramayana* and *Mahabharata* were staged.

11. Baghpat (*28° 57′ N latitude, 77° 13′ E longitude*)

Baghpat village lies on the eastern bank of the Yamuna River. However, the mound containing ancient ruins is about 2.5 km north of the Baghpat village. The village is called *purani* (old) Baghpat. To reach the mound one should reach the Baghpat chowk first through the Shahdara-Saharanpur Road, and from there take a left turn towards the Court Road, at the end of the Court Road, on the right side, a *kaccha* road of bricks leads to *khandwari*, the local name for the jungle, which has the agricultural fields and the ancient mound. The mound is about 1.7 km away from the end of the Court Road. Two forces of destruction are gradually affecting the mound. First are the farmers, who are converting the mound into agricultural land, and the other destructive force is the Yamuna, which is gradually eating into the mound. Villagers are practising agriculture on a large portion of the mound and it is really difficult to measure where the mound starts and where it ends. Nevertheless, as per my conservative estimates, at present the length of the mound is about 500 metres, the breadth is 500 metres, and the height is about 17 metres.

Assessment

Baghpat was identified as an ancient site by A. Cunningham (1862-63). B. B. Lal in 1954-55 had picked up Painted Grey Ware and Northern Black Polished Ware. As mentioned above, it is associated with the *Mahabharata* story as one of the villages demanded by the Pandavas. The local people informed me that there is an underground cave whose other end opens at Barnawa, the place that is associated with the *Lakha mandap* episode mentioned above. At present, the entrance of the cave is totally covered and has itself become a part of the mound.

During my explorations on the mound, I picked up cultural remains belonging to Painted Grey Ware, Black slipped ware, NBP associated thick grey ware, early historic, Gupta, Post-Gupta and Medieval potteries. Earlier B. B. Lal has reported NBPW from the site. These evidences show a cultural continuity from the PGW period onwards.

Drawings of some of the potteries recovered from the Baghpat mound are shown in the Fig. 9a, 9b and 9c. Here is a brief description of these potteries:

1. Bowl of grey ware, with featureless direct rim, near hemispherical, fine fabric, bottom parabolic, PGW associated.
2. Bowl of grey ware, shallow funnel shape flange with upturned edge, fine fabric, PGW associated.
3. Vase of red ware with an externally splayed out rim, slightly concave neck and oblique shoulders having grooves, medium fabric, Gupta-Post-Gupta.
4. Miniature bowl of black slipped ware with incised straight lines on the rim, PGW associated.
5. Potsherd of Painted Grey Ware, with a black colour thick stroke.
6. Potsherd of Painted Grey Ware, with two black colour thin strokes.
7. Cauldron, hemispherical with slightly constricted double-headed rim, brick red, coarse fabric, Gupta-Post-Gupta.

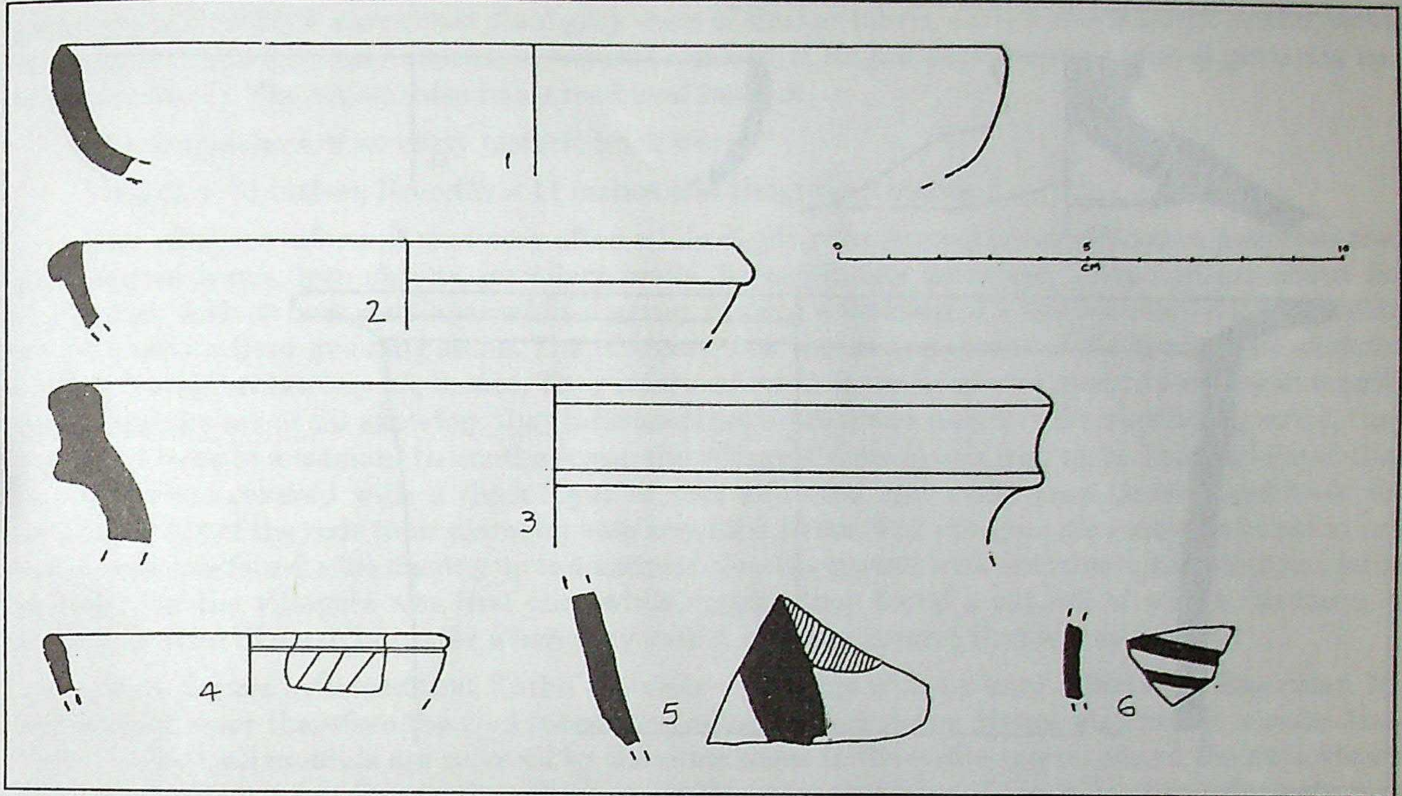
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Fig. 9-a : Pottery shapes from Baghpat

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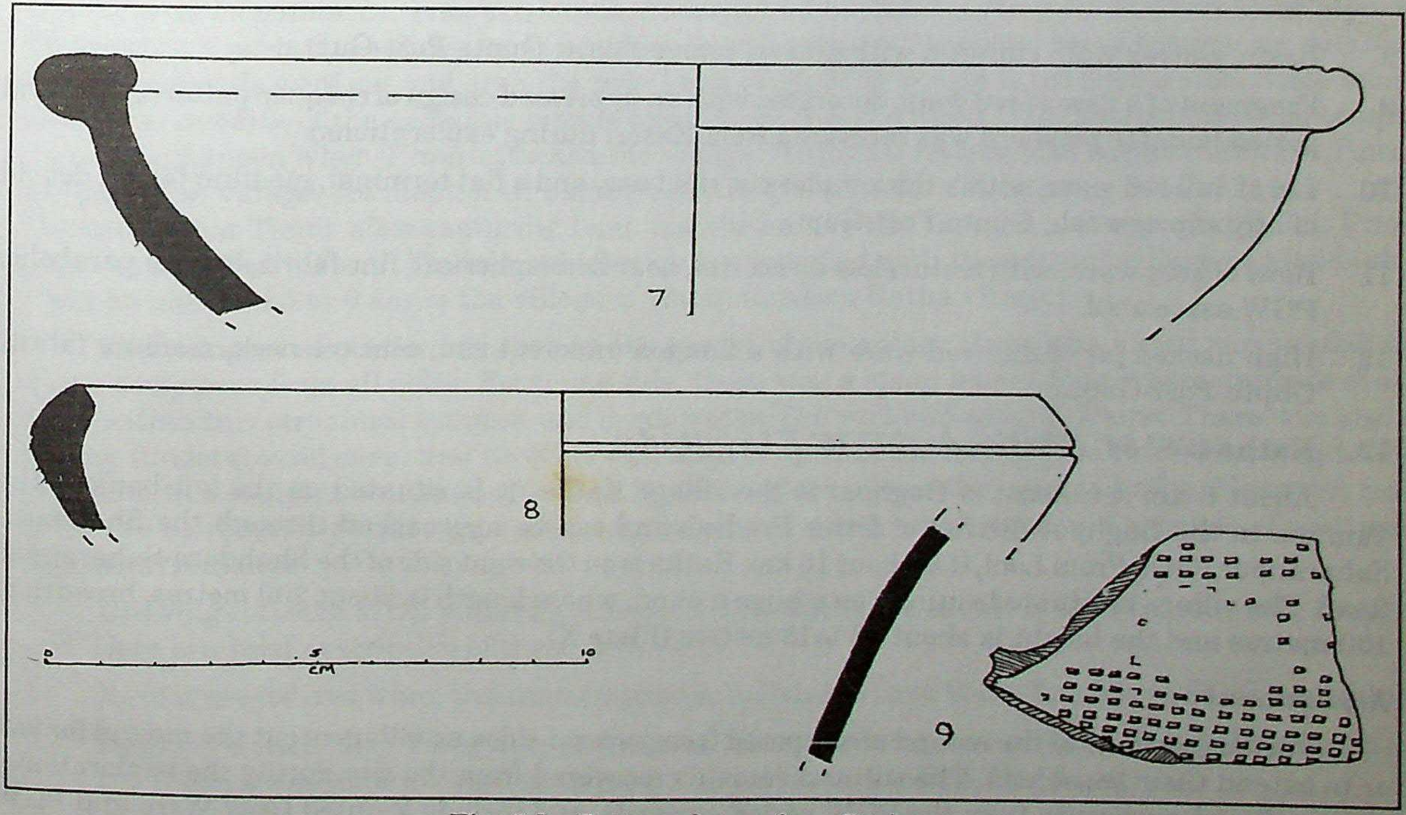

Fig. 9-b : Pottery shapes from Baghpat

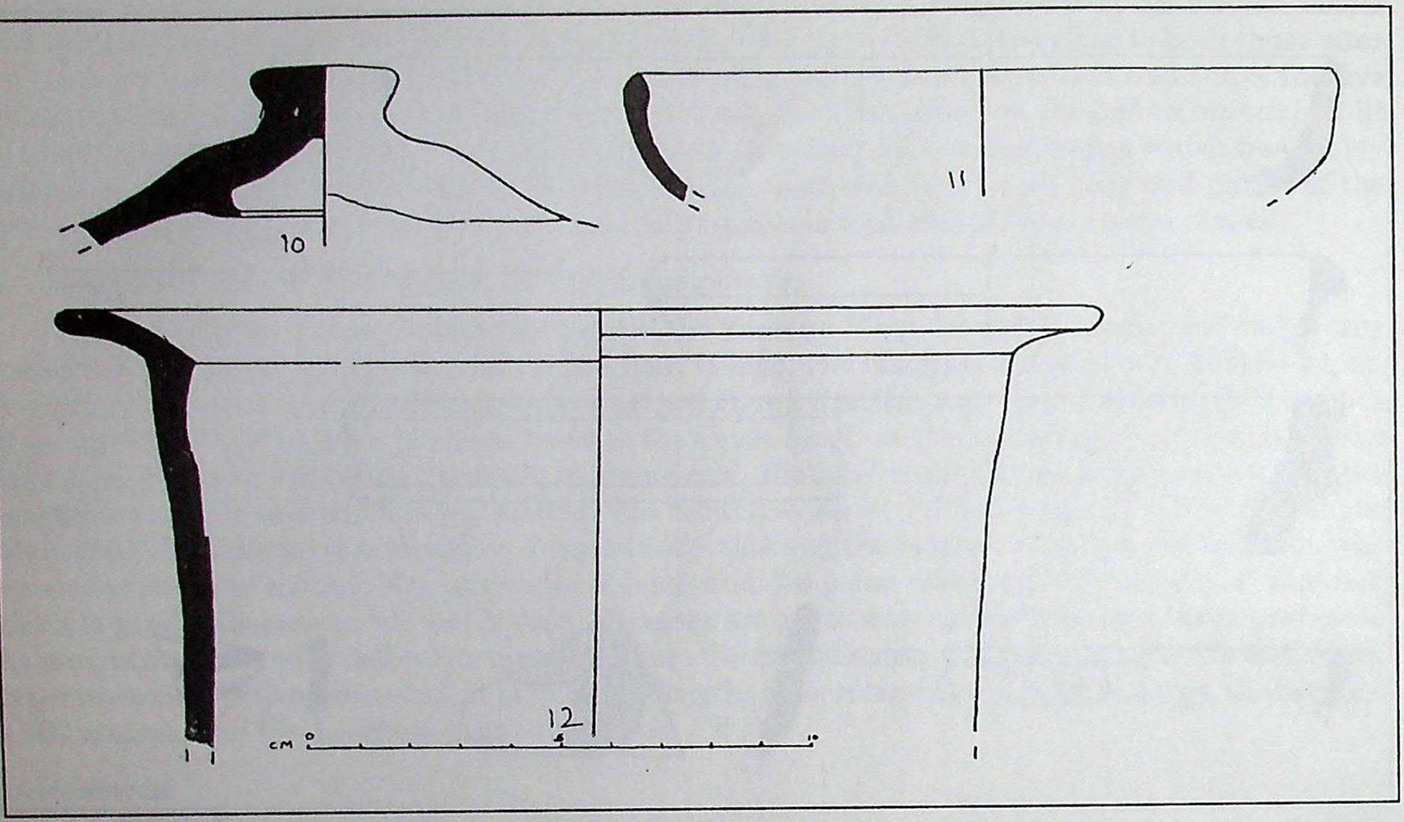

Fig. 9-c : Pottery shapes from Baghpat

8. Basin, convex wall, club-rim with groove, coarse fabric, Gupta-Post-Gupta.
9. Fragment of a vase of red ware, decorated with an impressed design of chequer-pattern, Medieval period (similar potsherd was recovered from Kaseri during explorations).
10. Lid of dull red ware, with a thick under cur rim base, and a flat terminal, medium fabric, devoid of any slip or wash, Gupta-Post-Gupta.
11. Bowl of grey ware, with featureless direct rim, near hemispherical, fine fabric, bottom parabolic, PGW associated.
12. High necked jar of dull red ware with a flanged undercut rim, concave neck, medium fabric, Gupta-Post-Gupta.

12. Katha (*28° 54′ N latitude, 77° 15′ E longitude*)

About 6 km southeast of Baghpat is the village Katha. It is situated on the left bank of the Yamuna in the Baghpat district of Uttar Pradesh and can be approached through the Shahdara-Saharanpur Road. From Loni, it is about 16 km. Katha is on the right side of the Shahdara-Saharanpur Road. The village is situated entirely on a huge mound, whose length is about 200 metres, breadth is 100 metres and the height is about 16 to18 metres (Plate X).

Assessment

Various sections of the mound are exposed from several sides as villagers cut the mound for soil or to extend their household. The cultural remains recovered from the site during the explorations, show cultural continuity from the PGW period onwards, and include Painted Grey Ware and PGW associated red ware and grey ware (the site has a very thick layer of PGW as compared to other pottery types), NBPW associated plain grey ware of thicker fabric, early historic burnt bricks, bones of animals (Plate XI) and humans, structural remains of Rajput period and Medieval potteries and bricks (*lakhori*). The village also has a medieval mosque.

The dimensions of an early historic brick were:

Length = 13 inches, Breadth = 11 inches and Height = 3 inches

The villagers informed that very often while digging the mound for construction purposes they come across bones, iron objects, jewellery, wells, flour-grinding stone etc. They told me about few incidences, such as once a villager while digging, noticed a skeleton of a woman who was in a sitting position near a flour-grinding stone. The villagers took the measurement of the head of the skeleton as they found it relatively big in size. They informed me that the head was about 12 inches in length. Regarding the sex of the skeleton, they informed that since it was next to a flour-grinding stone, they assume it to be of a woman. In another case, the villagers came across iron rods. They informed that the rods were covered with a thick layer of rust and mud and when they cleared and took the measurement of the rods their diameter was around 0.10 cm. The villagers also informed that in one case a well was found after digging up to 4 metres below the ground level. Another interesting incidence narrated by the villagers was that once while digging they found a pot full of wheat. To them, it initially looked like ash but later when they took it out they noticed that it was wheat.

The villagers informed that Katha was once a fort from where a king called Raja Ror ruled. He was a cruel ruler therefore the God turned the village upside down. Hence they call it a *palta-hua-khera*. In fact, all mounds are referred by the same name in the entire region where the exploration was undertaken. According to the villagers, on the present border of the village (a relatively new village called Pali occupies the border area of Katha village) there was a *chabutara* (platform) made of *chukhunti ke pathar i.e.* grey sandstone. Flowers and human figures were built on these stones. These were a part of the Shiva temple, which is still present. However, these figures are defaced, breasts of female were cut and even the Shiv linga of the Shiv temple is cut from a side. Some stone structural remains of the erstwhile temple complex were also noticed. The destruction of the temple appears to happen when Timur attacked the village. Historical records also suggest that the Timur attacked the village. As mentioned earlier also, R. Burn in the *Gazetteer of Meerut* (1922 : 152) illustrates that Timur after capturing Loni, marched along the Yamuna and captured Delhi. From there he marched 6 *kos* to Mudula, which may be identified with the present village of Mandaula. Then he marched 5 or 6 *kos* to the village of Katah (modern Katha village).

The villagers also informed that on the border of the village there was a well surrounded by house-complexes from all sides. From one side, there was a steep ascent from where animals could come within this structural complex and drink water. The well had several drains. There was also a *surang* (underground cave) and its other end used to open in the fort of Raja Ror. According to the villagers, this complex was made for Raja Ror's daughter where she used to bathe. However, now there are no remains of this structural complex, except a very small pond and a couple of scattered structural remains.

Drawings of some of the potteries recovered from Katha are shown in the Fig. 10a, 10b, 10c and 10d. Here is a brief description of these potteries:

1. Bowl of greyish red ware, treatment is similar to Painted Grey Ware, fine fabric, PGW associated.
2. Bowl of Painted Grey Ware with an incurved sharpened rim, convex sides. It is painted both on the interior and exterior surface of the pottery with six strokes, fine fabric.

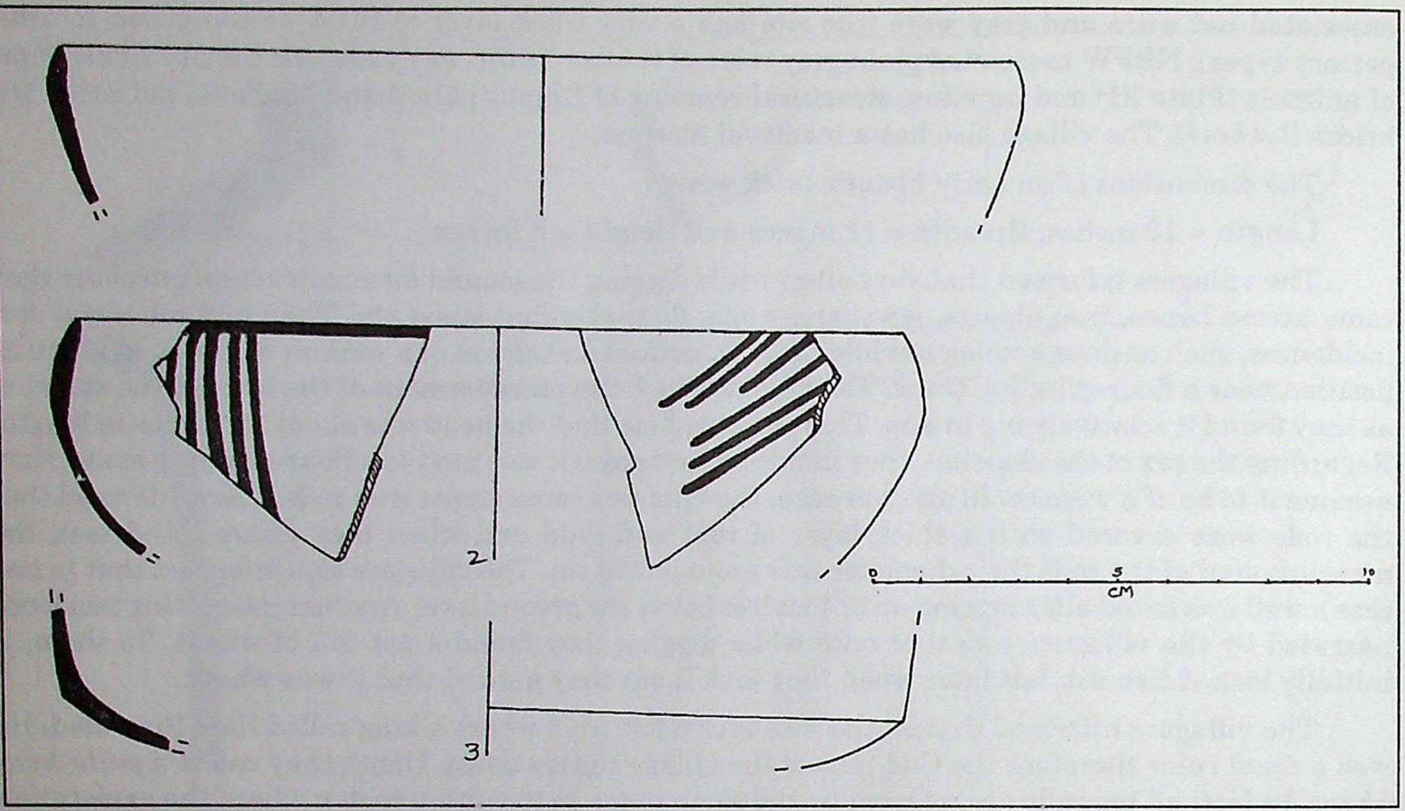

Fig. 10-a : Pottery shapes from Katha

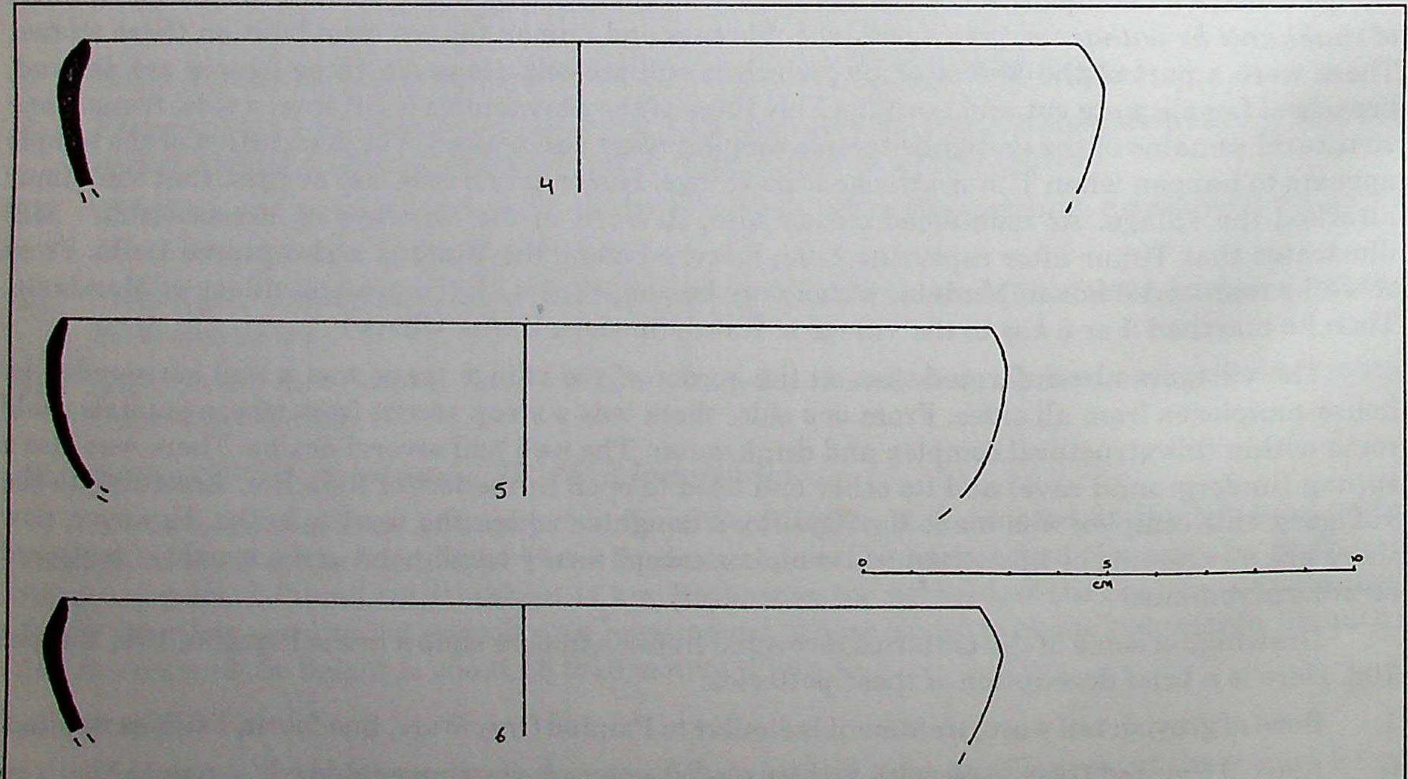

Fig. 10-b : Pottery shapes from Katha

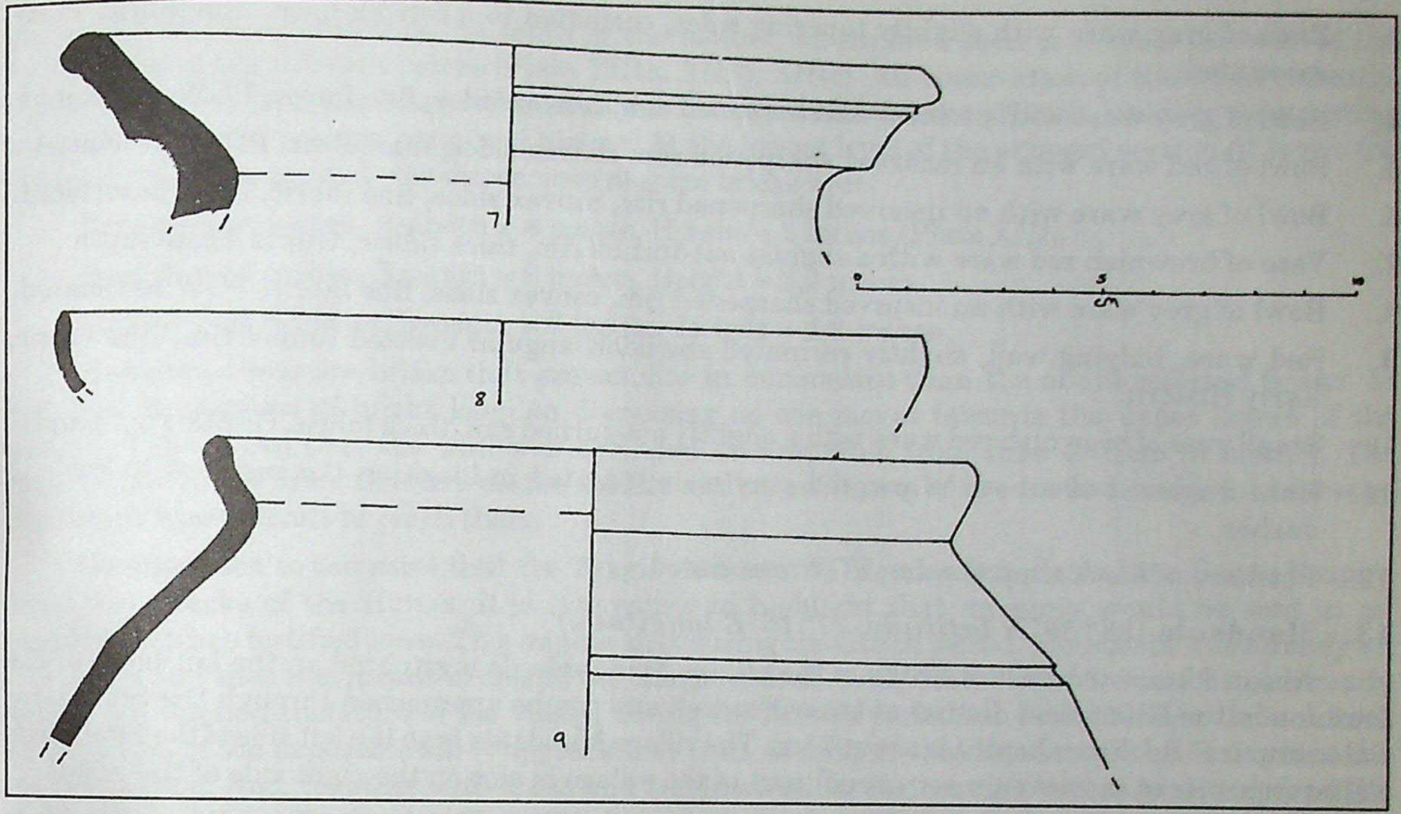

Fig. 10-c : Pottery shapes from Katha

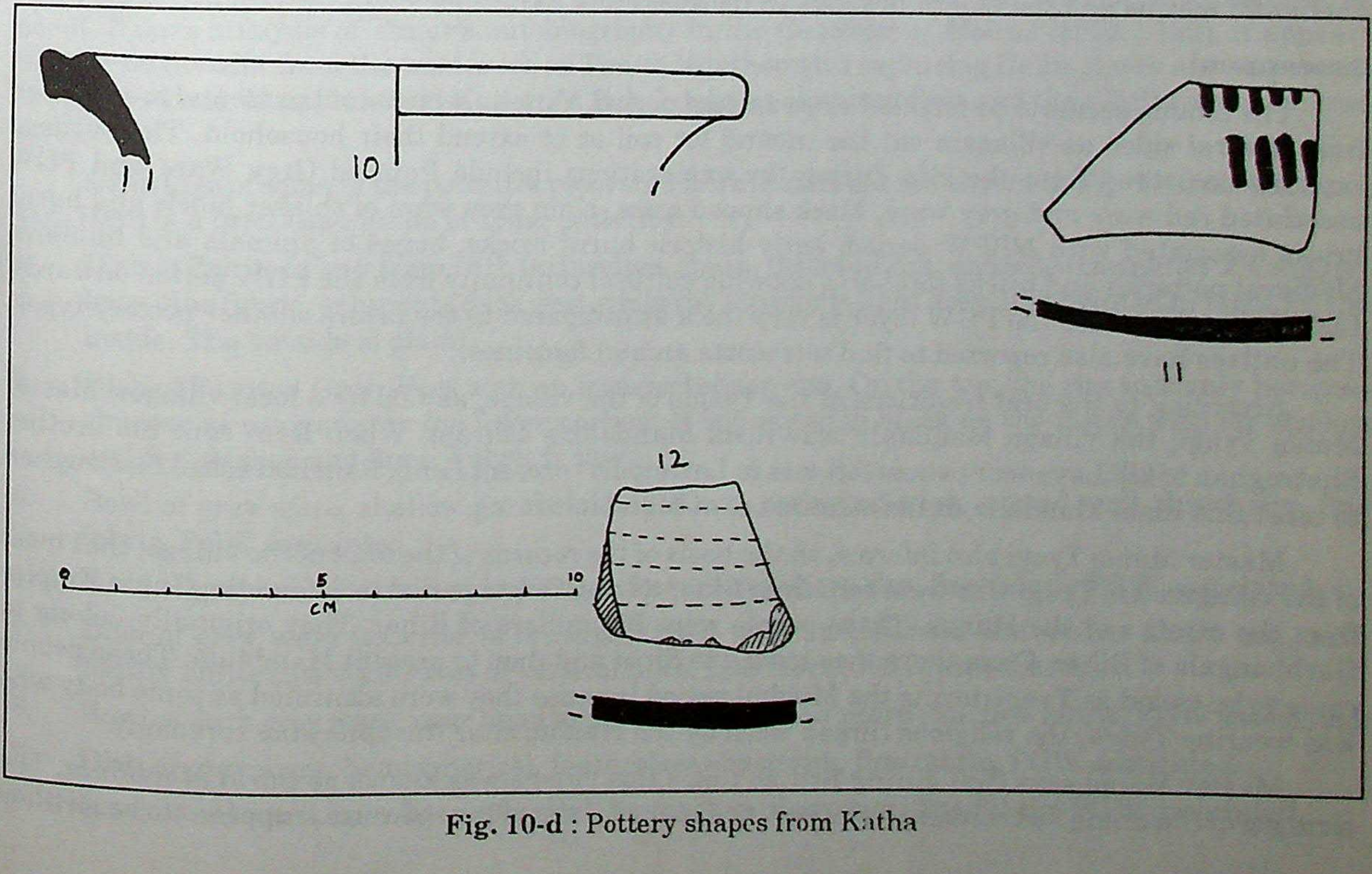
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Fig. 10-d : Pottery shapes from Katha

3. Bowl of grey ware with slightly tapering sides, carinated to a convex base, fine fabric, PGW associated.
4. Bowl of grey ware with an incurved sharpened rim, convex sides, fine fabric, PGW associated.
5. Bowl of red ware with an incurved sharpened rim, convex sides, fine fabric, PGW associated.
6. Bowl of grey ware with an incurved sharpened rim, convex sides, fine fabric, PGW associated.
7. Vase of brownish red ware with a slightly out-turned rim, thick fabric, Gupta-Post-Gupta.
8. Bowl of grey ware with an incurved sharpened rim, convex sides, fine fabric, PGW associated.
9. Red ware, bulging wall, slightly carinated shoulder, angular everted funnel rim, fine fabric, Early Historic.
10. Small vase of brownish red ware with a slightly out-turned rim, thick fabric, Gupta-Post-Gupta.
11. Base fragment of a bowl of painted grey ware, painted in black on the inside with rows of dashes.
12. Potsherd of black slipped ware, PGW associated.

13. Mandaula (*28° 49′ N latitude, 77° 16′ E longitude*)

About 8 km southwest of Katha is the village Mandaula. It is situated on the left bank of the Yamuna in the Ghaziabad district of Uttar Pradesh and can be approached through the Shahdara-Saharanpur Road. From Loni, it is about 7 km. The village Mandaula is on the left side of the Shahdara-Saharanpur Road (however, a very small part of the village is also on the right side of this road).

The village is situated entirely on a huge mound, whose length is about 300 metres, breadth is about 400 metres and the height is about 18 metres (Plate XII).

Assessment

The mound seems to be fortified since ancient period. Various sections of the mound are exposed from several sides as villagers cut the mound for soil or to extend their household. The cultural remains recovered from the site during the explorations include Painted Grey Ware and PGW associated red ware and grey ware, black slipped ware, plain grey ware of thicker fabric and burnt bricks associated with NBPW period, early historic burnt bricks, bones of animals and humans, Medieval potteries and bricks (*lakhori*), showing cultural continuity from the PGW period onwards. Like Katha, here also the PGW layer is very thick as compared to the layers of other pottery types. The natives have also reported to find terracotta animal figurines.

According to the oral traditions of the Tyagis of the village, as told by a local villager, Master Manoj Tyagi, the village Mandaula was Rishi Mandalik's ashram. When Ram sent his brother Shatrughan to kill Lavansur (whose fort was in Lavanpuri - present Loni), Ram had asked Shatrughan to meet this Rishi Mandalik at his ashram i.e. at Mandaula.

Master Manoj Tyagi also informs, on the basis of the records of the *bhat* of the village, that most of the villagers are Tyagi who were sent from Bihar during Gupta period to defend the Gupta Empire from the attacks of the Hunas. These people were Bhumihars of Bihar. They originally belong to Garhbangala of Bihar. From there they moved to Sirsa and then to present Mandaula. These people came to be called as Tyagi during the Mughal period because they were identified as some body who was wearing *Tyaga*, the religious thread worn by the Hindus after the *upnayana* ceremony.

Master Manoj says that during British times this village was known as *Garhi Mandaula*. The term *garhi* (meaning fort) seems to be a justified name for the village because it appears to be fortified since ancient times. Towards the south of the mound, an exposed section reveals the wall of the fortification made of burnt bricks (Plate XIIIa, XIIIb, XIIIc). An observation of the walls indicates that from time to time the height of the wall was increased and the size of bricks used for constructing the wall vary with various periods of history. At the lowest level of the exposed section (it is not the lowest level of the mound) the dimensions of some bricks are:

Length = 18 inches, Breadth = 8 inches, Height = 3 inches (Plate XIIIa)
Length = 16 inches, Breadth = 8 inches, Height = 2.2 inches
Length = 14.5 inches, Breadth = 7 inches, Height = 2.3 inches

However, there are bricks that are smaller in dimensions than the above referred bricks. In fact, the dimensions of bricks keep on decreasing as one moves towards the upper layers of the mound. This shows that the wall was extended and repaired from time to time in history. The dimensions of the brick that are on the middle and upper layers of the mound could not be taken because it was difficult to reach them.

Coming back to the point that the Tyagis were sent to Mandaula to defend the Gupta Empire from the attacks of the Hunas, it is interesting to highlight that an army would be sent in all probabilities to a fortified town. This implies that during the Gupta period, Mandaula was already an important fort that was meant to defend the Gangetic doab. And, that it indeed was a fort is already clear from the nomenclature of the village during the British period *i.e. Garhi* Mandaula and from the remains of the exposed wall. It appears that Loni, Mandaula and Katha were all forts since the ancient period. And, together with trade and administration, their main purpose was to defend the Gangetic doab from foreign invaders. The historical accounts also show that these were important forts, which an invader must capture to establish his strong hold over north India. For example, as per R. Burn's analysis of Timur's autobiography in the *Gazetteer of Meerut* (1922 : 152), it appears that for an invader from the west, such as Timur, together with capturing Delhi, it was also important to capture Loni, Mandaula and Katha. In fact, Loni was captured first and then Delhi was captured by Timur.

Drawings of some of the potteries recovered from Mandaula are shown in Fig. 11a, 11b, 11c and 11d. Here is a brief description of these potteries:

1. Dish of Painted Grey Ware with featureless, sharp, incurved rim, and sides carinated to a sagger-base, fine fabric, exterior is dark grey while the interior is light grey. It is painted in black on the inside. The outside is plain.
2. Dish of Painted Grey Ware with an inturned sharp rim. On the top, the rim suddenly becomes sharper as compared to the lower portion. It is painted in black on the inside with six strokes and few dashes and lines. Fabric is fine.
3. Bowl of grey ware, shallow paraboloidal bottom, carinated edge, curved wall, direct rim, fine fabric, PGW associated.
4. Bowl of grey ware, near hemispherical, featureless sharp rim, fine fabric, PGW associated.
5. Dish of grey ware (exterior is brownish grey) with an inturned featureless sharp rim, with hardly noticeable six strokes of vertical lines, fine fabric, PGW associated.
6. Bowl of dark grey ware, near hemispherical, featureless sharp rim, fine fabric, PGW associated.
7. Dish of grey ware, hemispherical, featureless sharp rim, fine fabric, PGW associated.
8. Bowl of red ware, near hemispherical, featureless sharp rim, fine fabric, PGW associated.

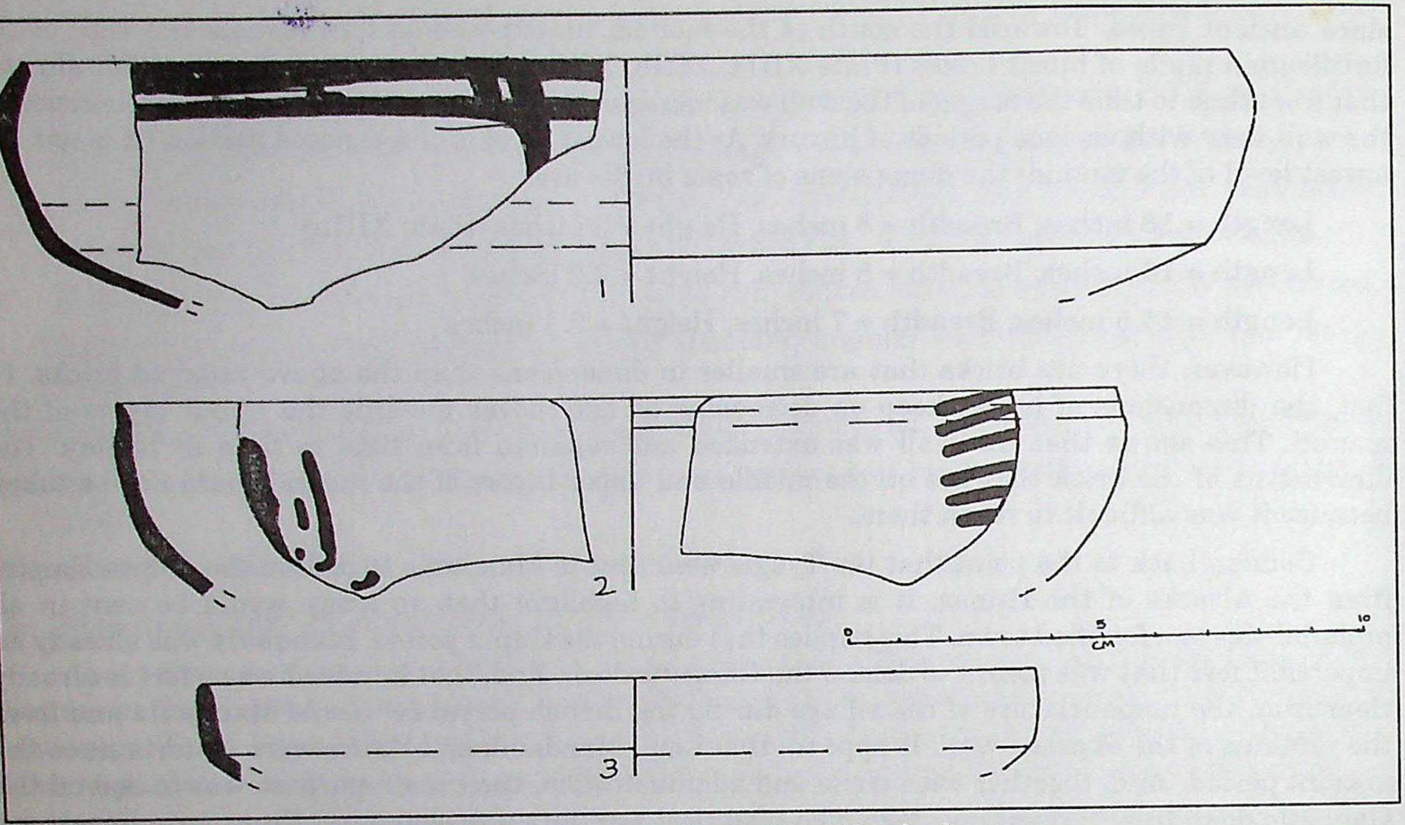

Fig. 11-a : Pottery shapes from Mandaula

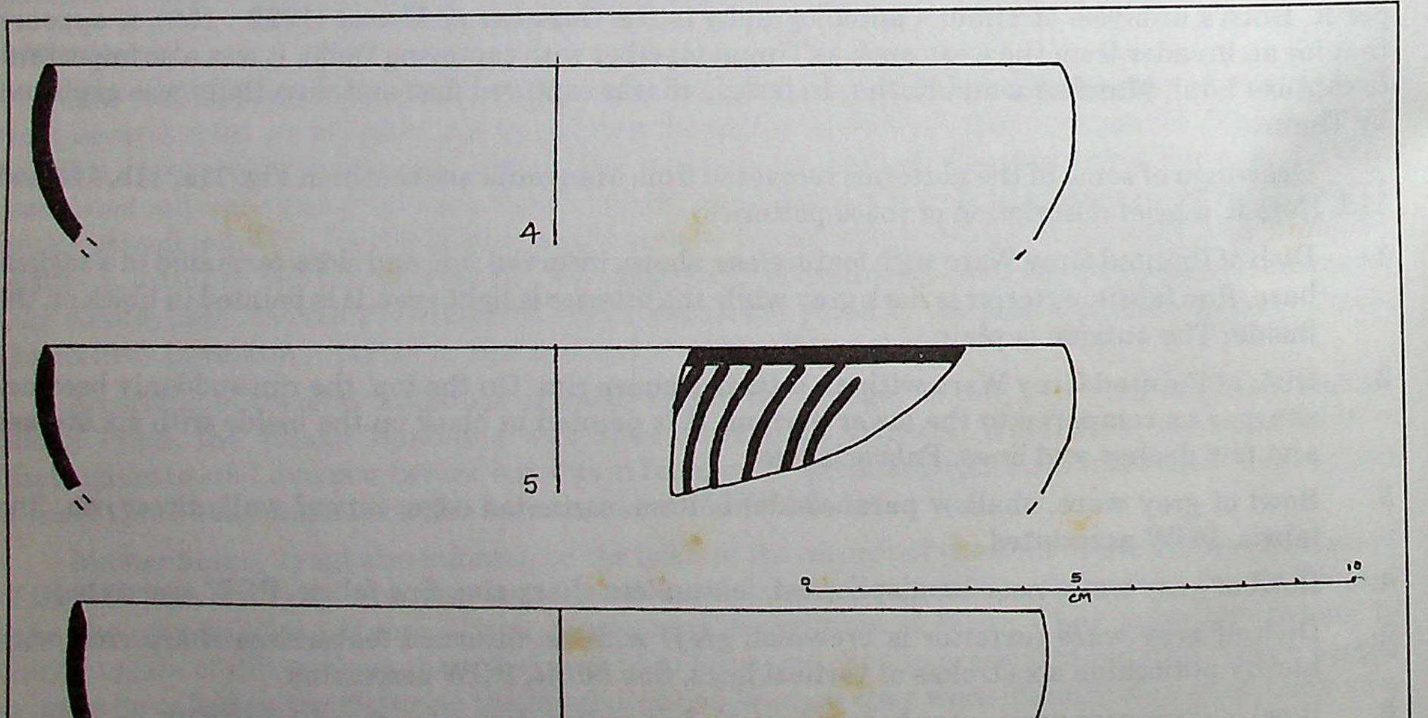

Fig. 11-b : Pottery shapes from Mandaula

पुस्तकालय

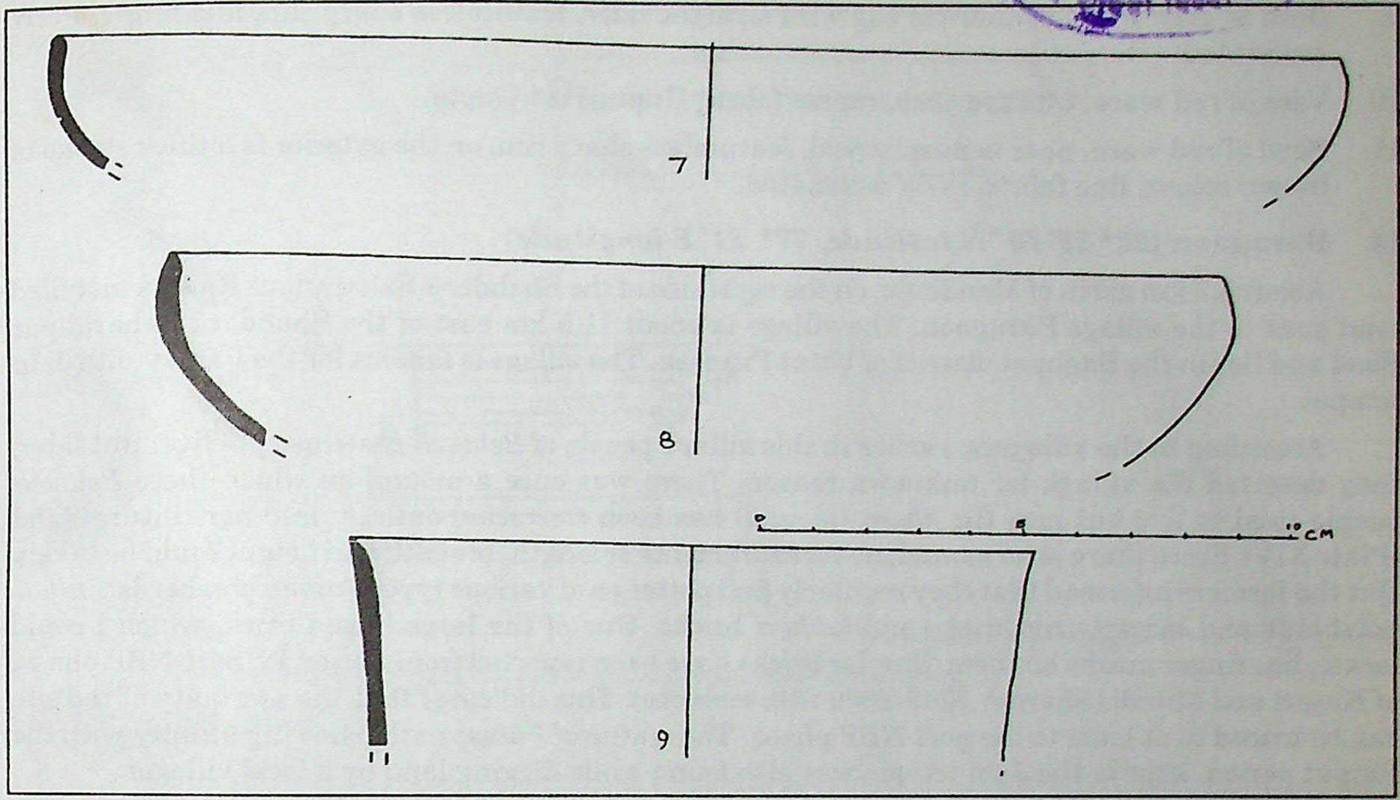

Fig. 11-c : Pottery shapes from Mandaula

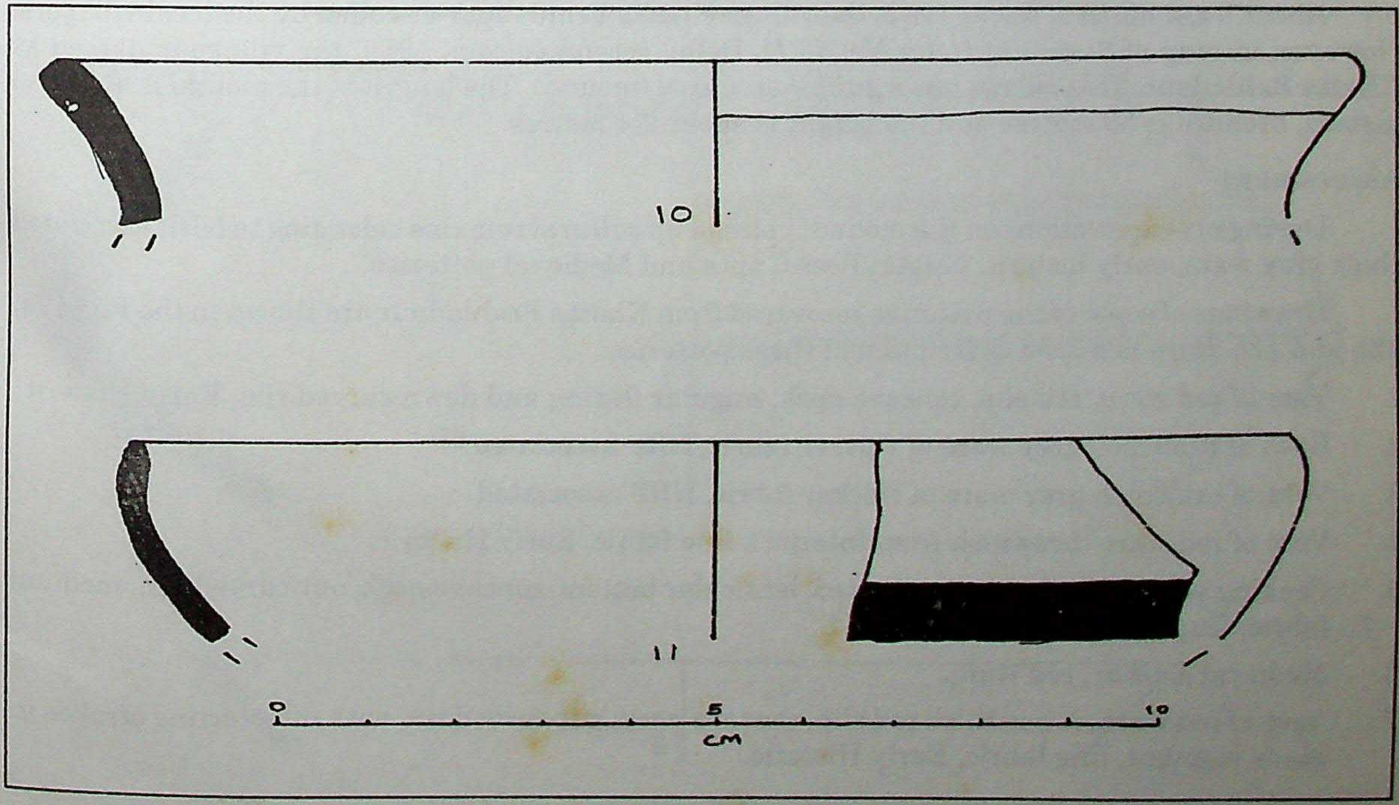
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Fig. 11-d : Pottery shapes from Mandaula

9. Bowl of grey ware, cylindrical cup with straight sides, featureless sharp rim, fine fabric, PGW associated.
10. Vase of red ware, concave neck, coarse fabric, Gupta-Post-Gupta.
11. Bowl of red ware, near hemispherical, featureless sharp rim, on the exterior is a thick stroke of brown colour, fine fabric, PGW associated.

14. Baragaon (*28° 52′ 40″ N latitude, 77° 21′ E longitude*)

About 5.5 km north of Mandaula, on the right side of the Shahdara-Saharanpur Road, a metalled road goes to the village Baragaon. The village is about 11.5 km east of the Shahdara-Saharanpur Road and lies in the Baghpat district of Uttar Pradesh. The village is famous for the Parsavnath Jain temple.

According to the villagers, earlier in this village people of *Belauch* caste used to live. But later, they deserted the village for unknown reason. There was once a mound on which these *Belauch* people used to live but now the *khera* (mound) has been converted entirely into agricultural land (Plate XIV). Since there is no mound, no measurements of length, breadth and height could be taken. But the farmers informed that they regularly find potteries of various types, *hukka* potsherds, *kulhar* potsherds and large burnt bricks and *lakhori* bricks. One of the large baked brick, which I could locate, has finger marks on them. Similar bricks have been reported from Period IV, post-NBP phase, of Kaseri and Mandi (Sharma 1999-2000 : 40, footnote). This indicates that the antiquity of the site can be traced to at least to the post-NBP phase. The statue of Parsavnath, showing affinity with the Rajput period, kept in the Jain temple was also found while digging land by a local villager.

15. Khatta Pahladpur/Prahladpur (*28° 54′ N latitude, 77° 22′ E longitude*)

About 3 km north of Baragaon is the village Khatta Prahladpur as called by the local villagers. However, in map of *Survey of India No. 53 H*, Delhi, second edition, 1980, the village is named as Khatta Pahladpur. This village has a *palta-hua-khera* (mound). The length of the mound is about 60 metres, breadth is 50 metres and the height is about 3-4 metres.

Assessment

During my explorations on the mound, I picked up cultural remains belonging to NBP associated thick grey ware, early historic, Gupta, Post-Gupta and Medieval potteries.

Drawings of some of the potteries recovered from Khatta Prahladpur are shown in the Fig. 12a, 12b and 12c. Here is a brief description of these potteries:

1. Vase of red ware, red slip, concave neck, angular flaring and down-curved rim, Early Historic.
2. Bowl of brownish grey ware of thicker fabric, NBP associated.
3. Vase of brownish grey ware of thicker fabric, NBP associated.
4. Vase of red ware (brownish from interior), fine fabric, Early Historic.
5. Cooking vessel of red ware, carinated, lenticular bottom, concave neck, out-curved rim, medium fabric, Gupta-Post-Gupta.
6. Medieval *Kulhar*, red ware.
7. Vase of red ware, it has thick red slip, concave neck, out-curved rim with intersecting strokes in black pigment, fine fabric, Early Historic.

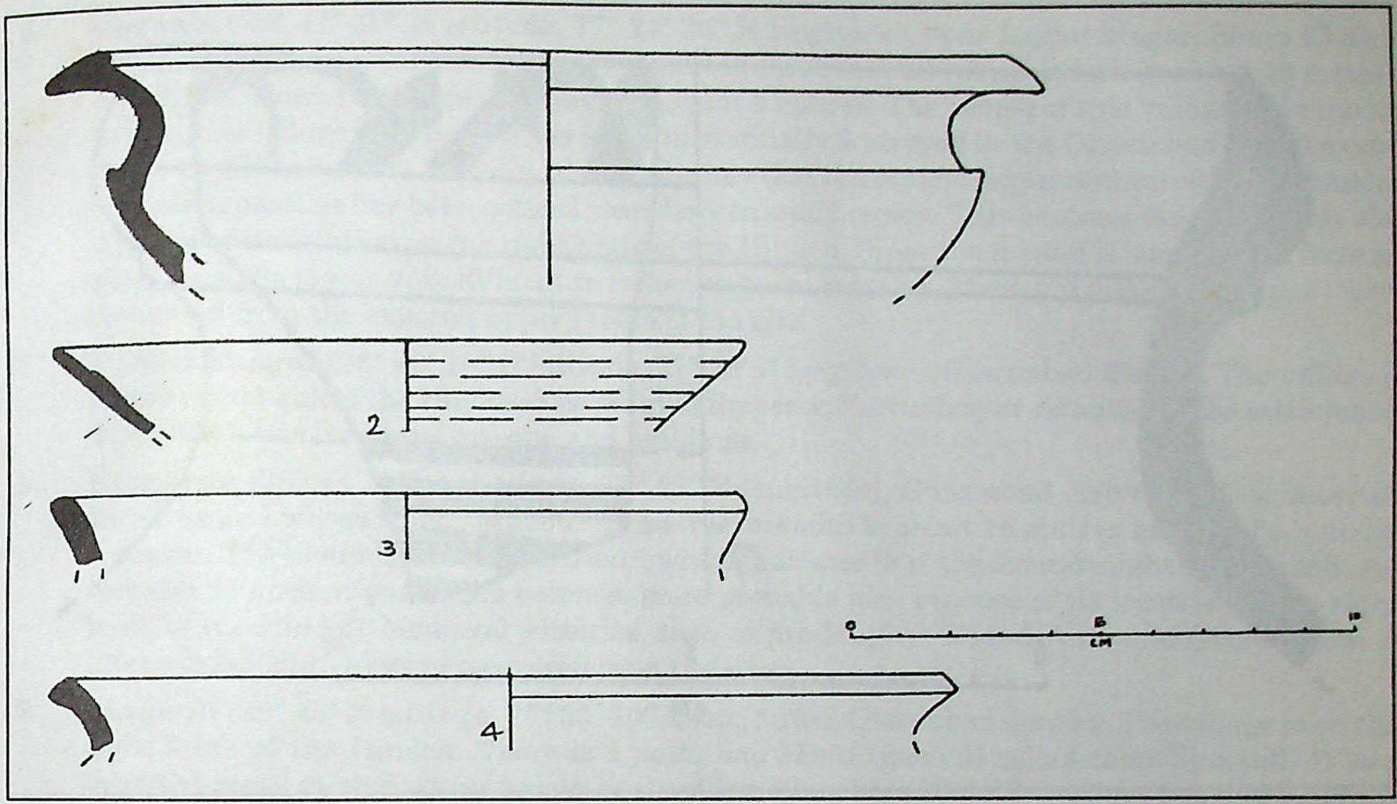


Fig. 12-a : Pottery shapes from Khatta Pahladpur

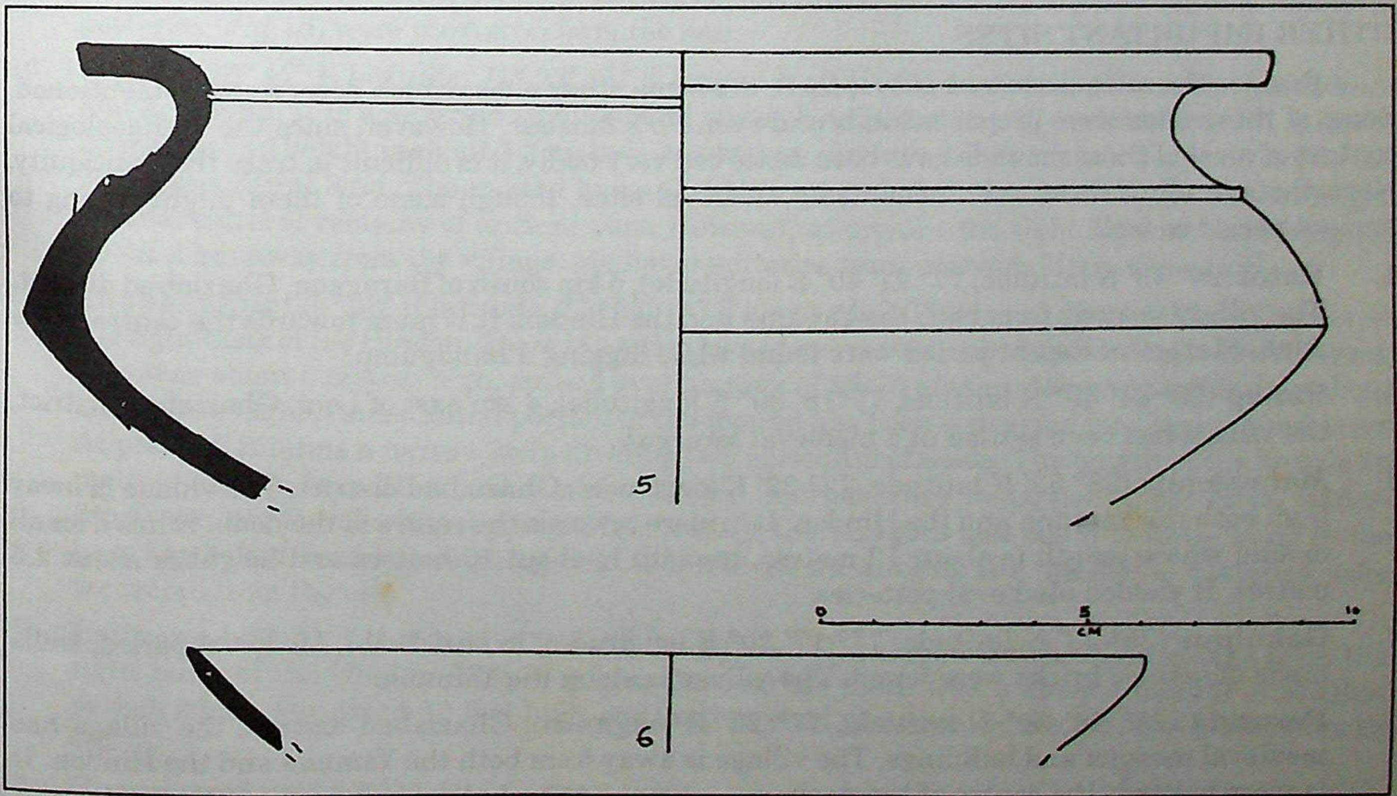


Fig. 12-b : Pottery shapes from Khatta Pahladpur

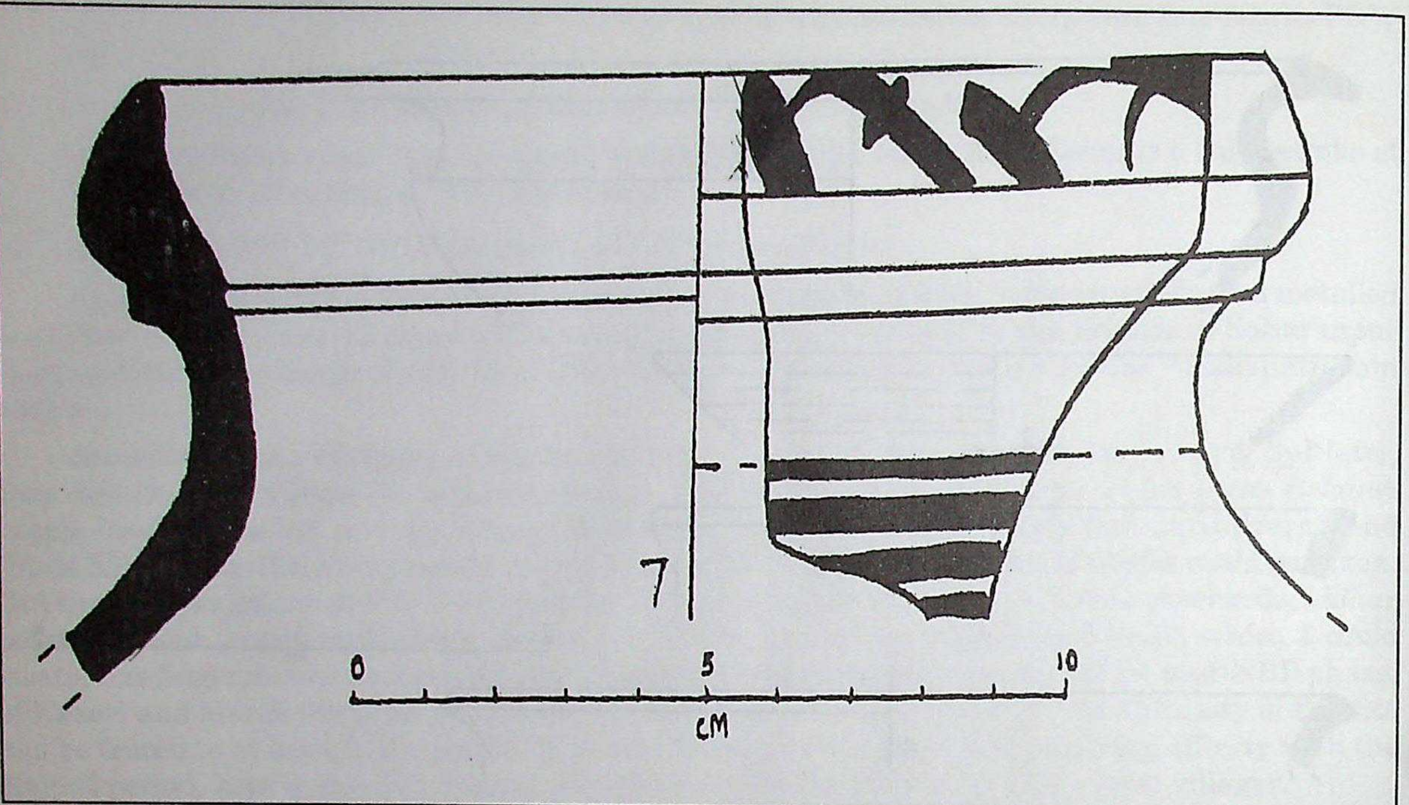


Fig. 12-c : Pottery shapes from Khatta Pahladpur

OTHER IMPORTANT SITES

Besides the sites discussed above, there are some other sites, which deserve to be mentioned. Some of these sites have proper mounds and even *Pir's Mazaar*. However, since the archaeological context of most of these mounds have been disturbed very badly, it is difficult to trace their antiquity. Nevertheless, all of these are undoubtedly medieval sites, though some of them might belong to ancient period as well.

1. **Ratol** (28° 49′ N latitude, 77° 21′ 40″ E longitude), 5 km south of Baragaon, Ghaziabad district. The village is away from both the Yamuna and the Hindon. It is more towards the centre of the doab. Statues of Rajput period were found while digging a handpump.
2. **Ranap** (28° 44′ 40″ N latitude, 77°18′ 30″ E longitude), 4 km east of Loni, Ghaziabad district, the village has been settled in a medieval *sikargah*.
3. **Mahrampur** (28° 53′ N latitude, 77° 22′ E longitude), Ghaziabad district. The village is away from both the Yamuna and the Hindon. It is more towards the centre of the doab. It has a small mound whose length is about 12 metres, breadth is about 10 metres and height is about 2.5 metres. It yielded Medieval potteries.
4. **Gokulpur** (28° 43′ N latitude, 77° 17′ 30″ E longitude), in east Delhi, Medieval period, wells made of *lakhori* bricks were found. The village is along the Yamuna.
5. **Pasunda** (28° 42′ 30″ N latitude, 77° 23′ E longitude), Ghaziabad district, the village has medieval mosque and buildings. The village is away from both the Yamuna and the Hindon. It is more towards the centre of the doab.

6. **Jagaula** (28° 41′ 30″ N latitude, 77° 23′ 30″ E longitude), near Lajpat Nagar, Shani Chowk, Sahibabad, Ghaziabad district. It is a deserted small mound whose length is about 20 metres, breadth is about 15 metres and height is about 3 metres. The people of this village have moved to Pasunda village. The mound has been substantially destroyed by the Ghaziabad Development Authority, It has a *Pir's Mazaar*, which indicates that the mound might contain cultural remains of ancient past, as has been noticed elsewhere in study region. This becomes more probable also because of its location on the right bank of the Hindon. Since the mound is surrounded from all sides by walls it was very difficult to collect cultural remains. Medieval potteries (Fig.13) were recovered from the exposed upper layers of the site.

7. **Farrukhnagar** (28° 43′ 10″ N latitude, 77° 23′ E longitude), Ghaziabad district. The village is on the right bank of the Hindon. The Mughal Emperor, Farrukhsiyar established the settlement. The village has medieval mosque and buildings.

8. **Kumhera** (28° 44′ 40″ N latitude, 77° 23′ E longitude), Ghaziabad district. It is a deserted small mound whose length is about 22 metres, breadth is about 18 metres and height is about 5 metres. The mound has a *Pir's Mazaar*, which indicates that the mound might contain cultural remains of ancient past. This becomes more probable also because of its location on the right bank of the Hindon. Medieval potteries, such as pre-Mughal Glazed Ware and Glazed Ware of later period (Fig.14) were recovered from the site.

9. **Singauli** (28° 46′ N latitude, 77° 23′ 10″ E longitude), Ghaziabad district. The village is on the right bank of the Hindon. There is a *palta-hua-khera* (mound) called *choti* Singauli. It is a deserted small mound whose length is about 8 metres, breadth is about 5 metres and height is about 1.5 metres. A substantial portion of the mound has been converted into agricultural land. People informed that wells, bones, potteries, *lakhori* bricks etc. are found while digging. Medieval potteries (Fig.15) were recovered from the site.

10. **Gauna** (28° 47′ N latitude, 77° 23′ 11″ E longitude), Ghaziabad district. There is a *palta-hua-khera*, mound. It is a deserted small mound whose length is about 35 metres, breadth is about 25 metres and height is about 3-4 metres. A substantial portion of the mound has been converted into agricultural land. The mound has a *Pir's Mazaar*, which indicates that the mound might contain cultural remains of ancient past. However, at present the right bank of the Hindon is about 2 km away from the village. Medieval potteries were recovered from the site.

11. **Shahbanpur** (28° 48′ N latitude, 77° 23′ 10″ E longitude), Ghaziabad district. The village is on the right bank of the Hindon. There is a *palta-hua-khera*, mound, which, according to the villagers, was once about 5 metres high, spread over an area of 15-16 *bighas*. At present, it is only about 1.5 metres high. A substantial portion of the mound has been converted into agricultural land. At present, it forms a narrow strip dividing two agricultural fields. The length of the strip is 50 metres and the breadth is just 1 metre. People informed that wells, bones, potteries, *lakhori* bricks etc. are found while digging. Significantly, the villagers also claim to have found in the past big baked bricks, indicating that it might be an ancient site. Medieval potteries were recovered from the site.

12. **Laliyana** (28° 51′ N latitude, 77° 24′ E longitude), Ghaziabad district. The village is on the right bank of the Hindon. People inform that earlier there was a *khera* (mound) of Mughal period, which was about 10 feet high and used to yield potteries, bones, wells of *lakhori* bricks etc.

13. **Chamrawal** (28° 52′ N latitude, 77° 24′ E longitude), Ghaziabad district. People inform that the village was once *ashram* of Chaman Rishi, after whose name it came to be known as

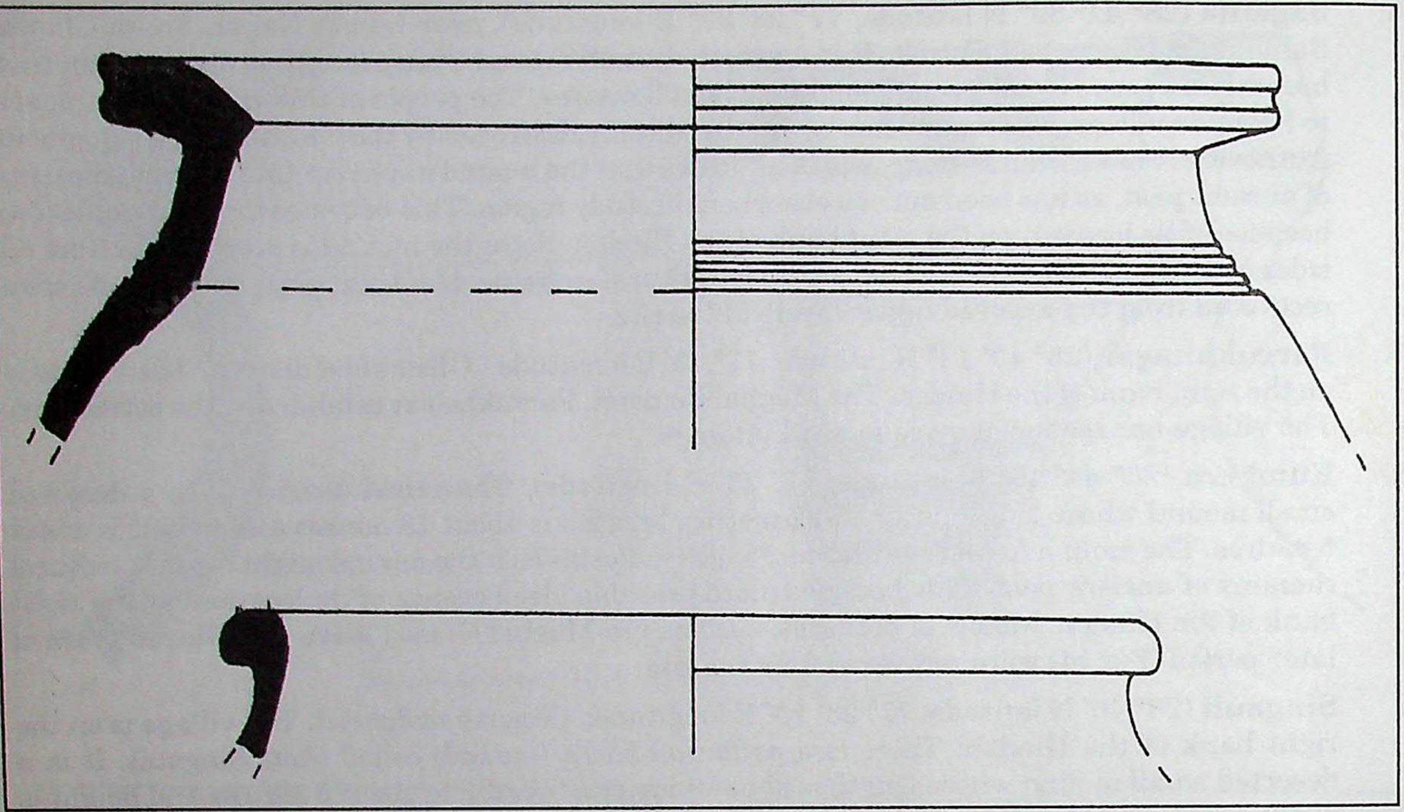


Fig. 13 : Pottery shapes from Jagaula

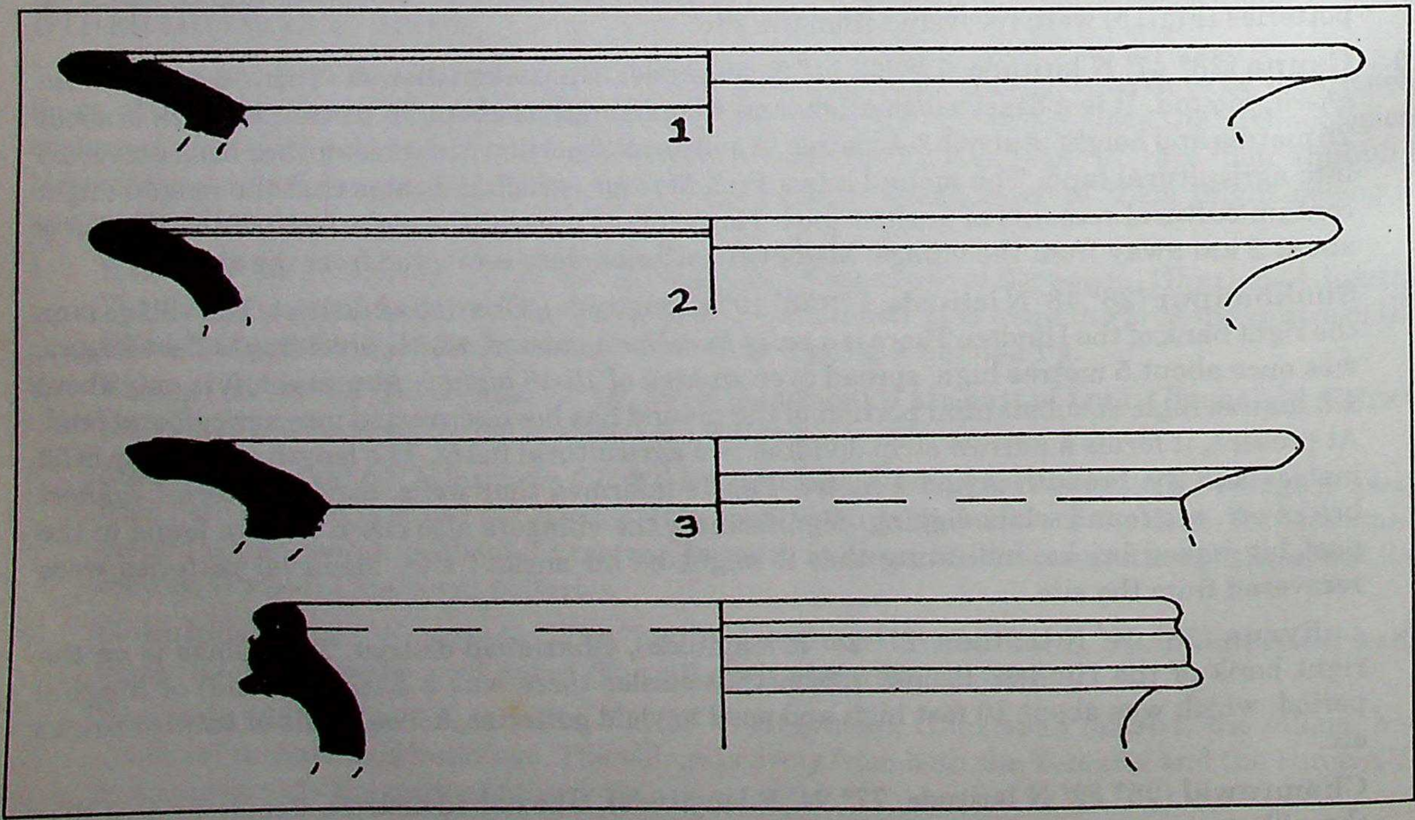


Fig. 14 : Pottery shapes from Kumhera

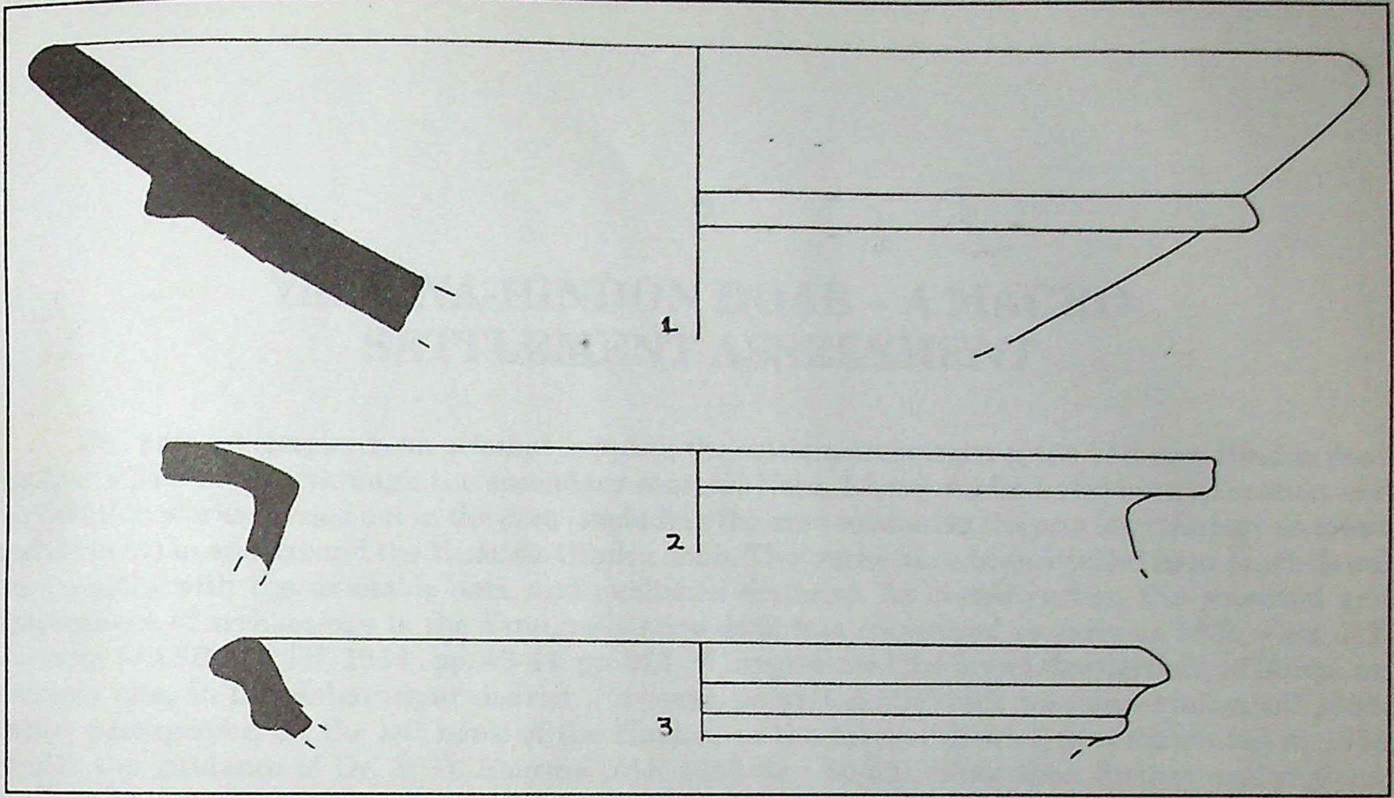


Fig. 15 : Pottery shapes from Singauli

Chamrawal. Bones, potteries, etc. are found while digging. Significantly, the villagers also claim to have regularly found big baked bricks, suggesting that it might be an ancient site. The village is on the right bank of the Hindon.

14. **Haresia** (28° 52′ 30″ N latitude, 77° 24′ 10″ E longitude), Ghaziabad district. The village is on the right bank of the Hindon. The villagers inform that there was a *khera* that has been cut by the Hindon. The villagers also claim to have found in the past big baked bricks, suggesting that it might be an ancient site. It is interesting to note that the village is just 1.5 km north of Chamrawal, and Allahapur is just opposite to it on the left bank of the Hindon.
15. **Surana** (28° 52′ 30″ N latitude, 77° 24′ 10″ E longitude), about 13 km west of Muradnagar in the Ghaziabad district. The village is on the left bank of the Hindon. The village has a mound whose height is about 4 metres, breadth is about 20 metres and length is about 25 metres. The mound has *Mazaar* of two *Pirs*. One of the *Pir's Mazaar* was made under a structural complex built of both *lakhori* bricks and early historic baked bricks. Interestingly, the village is about 1.5 km south of Allahapur.

Besides, the above listed sites, Daula, Dhakauli, Khekra, Gotra and Badshahpur are other medieval settlements. These are more towards the centre of the study region, away from both the rivers, the Yamuna and the Hindon.

5

YAMUNA-HINDON DOAB – A MACRO SETTLEMENT ASSESSMENT

The present chapter is an attempt to assess the settlement pattern of the Yamuna-Hindon doab on the whole mainly through the secondary sources. Here, I have studied various exploration and excavation works carried out in the area (excluding the area covered in the previous chapter on micro settlement) in and around the Yamuna-Hindon doab. The works have been studied in as much detail as possible with the available data and published material. As stated earlier, the potential and importance of archaeology in the Yamuna-Hindon doab was recognized as early as 1834 when P.T. Cautley (*JASB*, Vol. III, 1834 : pp. 43-44, pp. 221-27) appreciated the broad stratigraphy of Behat, an ancient site, in the Saharanpur district. However, no systematic work was undertaken till 1958, when Alamgirpur, on the left bank of the Hindon, in the Meerut district, was excavated in 1958 under the guidance of Dr. Y. D. Sharma (*IAR* 1958-59 : 50-55). Since then further explorations, mainly by the ASI, have brought to light more than 465 sites in the districts of Meerut, Saharanpur, Muzaffarnagar and Bulandshahr, and east Delhi. However, out of these besides Alamgirpur, only Ambkheri, Bargaon and Hulas in Saharanpur, Allahapur in Meerut, Mandoli in east Delhi and Kaseri in Ghaziabad have been excavated. Mandi, in the Muzaffarnagar district, is another site where a limited excavation was recently (2000) carried out under the direction of R. S. Bisht after a chance discovery of a jewellery hoard, which is believed to have Harappan affiliation. These excavations and explorations reveal that the earliest occupation in the Yamuna-Hindon doab belongs to the Late Harappan culture, dated to 2nd millennium B.C.

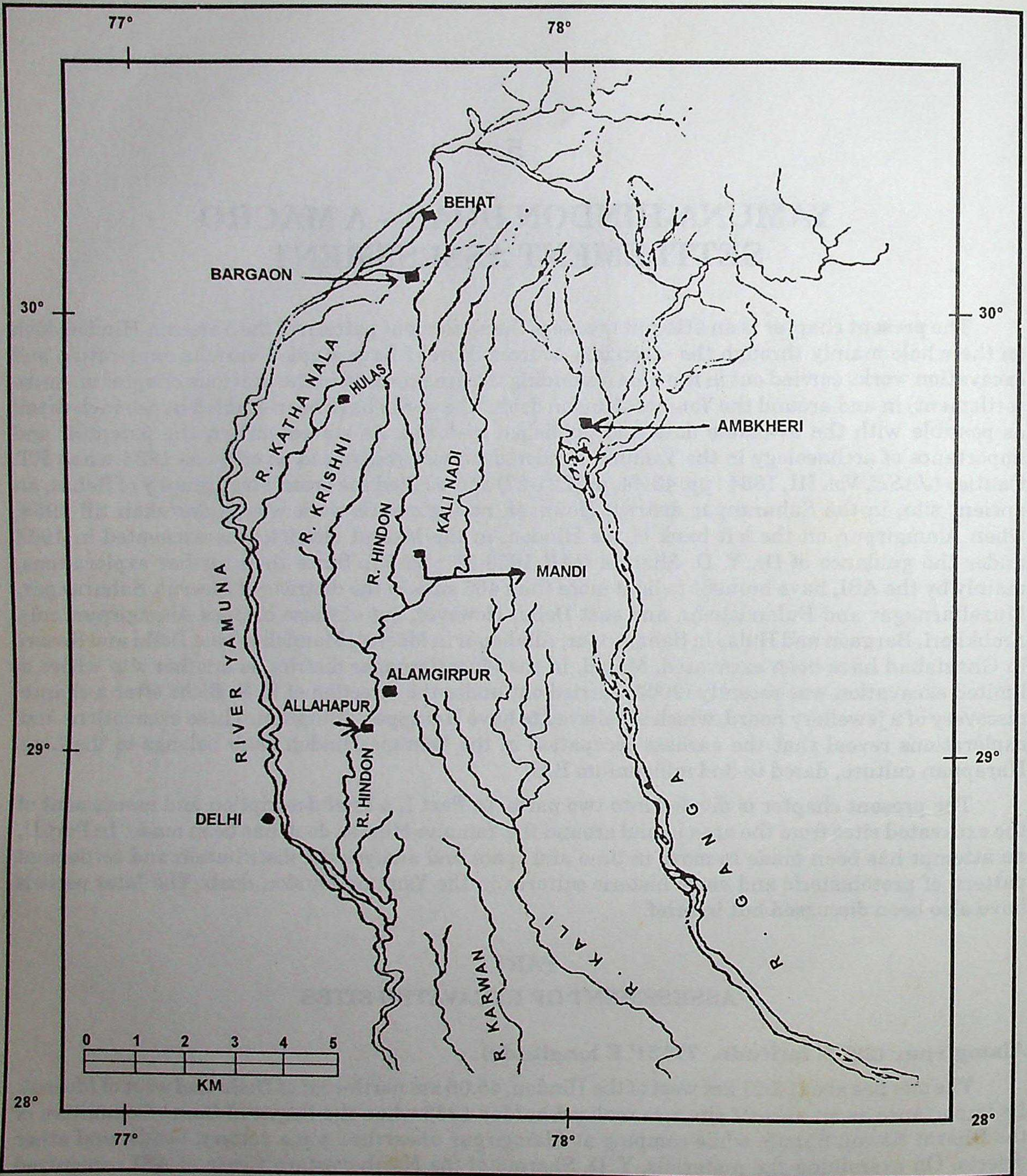
The present chapter is divided into two parts. In Part I, a brief description and assessment of the excavated sites from the area in and around the Yamuna-Hindon doab has been made. In Part II, an attempt has been made to move in time and space and analyse the distribution and settlement pattern of protohistoric and early historic cultures in the Yamuna-Hindon doab. The later periods have also been discussed but in brief.

PART I

ASSESSMENT OF EXCAVATED SITES

Alamgirpur (29° N latitude, 77° 31′ E longitude)

The site lies about 3.21 km west of the Hindon, 45.06 km north-east of Delhi and west of Meerut. Its importance as an ancient site was realized in May 1958 when the Regional Camp Committee of the Bharat Sewak Samaj, while camping at Alamgirpur unearthed some pottery, beads, and other objects. On examining the materials, Y. D. Sharma of the North-western Circle of ASI recognized Painted Grey Ware and fragments of terracotta cakes and faience bangles, pointing to the probable Harappan affiliation of the site. Subsequently, Y. D. Sharma undertook the work and his excavation revealed four cultural periods with a break in between all of them.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HULAS
R. KRISHNI
R. HINDON
KALI NADI
AMBKHERI
MANDI
RIVER YAMUNA
ALAMGIRPUR
ALLAHAPUR
DELHI
R. HINDON
R. KARWAN
R. KALI
R. GANGA
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Map 4

Location of Sites Mentioned in Macro-Study

Period I

Period I is represented by a thickness of 1.8 meters, belonging to the Harappan Culture. The unearthed pottery of this period includes the dish-on-stand, goblet with pointed base, straight-sided dish, cylindrical vase and beaker, goblet with a concave neck and elongated at base, shallow dish with incurved rim, shallow basin with tapering sides and a variety of rim-forms and perforated jar. The painted pottery motifs, executed in black pigment over a red slip, comprised simple bands, triangles, squares, intersecting circles, plants and peacock. The hatching was either in parallel lines or criss-crossed, there were also occasional blocked designs.

Interesting finds include a large pit with a crushed pile of thick platters and troughs. The platters had either a ring-base or three low legs and were probably used for preparing Indian bread. Some of the troughs also had short incised inscriptions consisting of two symbols, which were probably the potter's name or mark.

Evidence regarding cloth was provided by impressions on a trough. The yarn appears to be fairly fine, though not of uniform section, the technique was that of 'plain weave'.

Animal figurines include head of a bear (?), being part of a vessel, snake, and a fragmentary body of humped bull.

Other terracotta objects finds were cakes, carts, cubical dice, beads, and bangles. A small fragmentary terracotta ornament, possibly a bead, was coated with gold.

Miniature bowls, bangles of faience, beads of steatite and semi-precious stones, pins and a broken blade of bronze or copper were some other interesting finds.

No structural remains were found. This could be because of limited vertical excavation. However, we do have evidences of kiln-burnt bricks from the period. These bricks represented two groups:

1. the smaller size measuring 11¼ to 11¾ inch length, 5¼ to 6¼ inch in width and 2¼ to 2¾ inch in thickness, and
2. the larger averaging 14 inch × 8 inch × 4 inch;

The second group was, however, found used only in furnace. Some bricks had three finger-marks, either along the length or diagonally at the corner. Fragments of oblong tiles were also found in the pit referred above.

Two phases of construction were noticed.

Regarding the animal remains from the site, Bhola Nath and M. K. Biswas in their article, "*Animal Remains From Alamgirpur*", (*Indian Museum Bulletin* 1969) points out that the animal remains, all belonging to Harappan culture, show that a large number of bones belong to young animals and a few bones of *Bos indicus* Linn bear chopping mark by sharp instrument. These indicate that people practiced full-fledged domestication of animals. The domesticated animals include *Canis familiaris Linn, Bos indicus Linn, Bubalus bulalis Linn, Capra hircus aegagrus Erxl, Ovis vignei Blyth, Sus cristatus Wagner*. The wild animals represented by bone specimens include *Cervusduvauceli Cev, Axis axis Erxl*. The reptilian animals represented by bone specimens include *Molluscan shells, i.e., Parreysia favidens (Benson), Viviparous bengalensis Linn*.

The Break between Period I and Period II

The break between these Periods I and II is represented by respective cultural assemblages, difference in the texture and composition of their layers. Hence, while the deposits of Period I were compact and brownish, those of Period II were loose with frequent bands of burnt earth and ash.

Moreover, the top-surface of Period I was hard and whitish, signifying a long exposure. Over a large portion of the mound this surface was found strewn with small weather-worn potsherds.

Period II

The average thickness of Period II was 4½ feet and was represented by the Painted Grey Ware, the black-slipped ware, the black-and red ware, and plain red wares. "In the first three wares, the main types were the bowl, usually with straight sides and flattish base, and the dish with sides incurved and bluntly-carinated to meet a mildly-convex base. A black-and-red ware bowl with a convex base had a grooved carination at the shoulder. The dish with incurved sides also occurred in the red ware, but a few specimens seemed to have been fired deliberately to that colour, others having become partly red and partly grey as a result of differential firing. There was the smoothly-finished basin in the red and grey wares. The cooking and storage-vessels had a rough surface and dusty-brown to grey colour, with mica as one of the *degraissants*. The types included the jar with a splayed-out rim, internally-carinated neck and globular body, the jar with flared rim and concave neck, the jar with a thickened rim and vertical neck and the basin with grooved and collared rim" (*IAR* 1958-59: 54).

Two wheeled terracotta toys, representing a bull and a ram respectively, brought to light a new tradition: the animal figurines were beautifully finished, with incised strokes on the body and provided with a hole through the nostrils, evidently for the insertion of the string.

An interesting find that is generally found at the Northern Black Polished Ware and later levels at other sites (such as at Hastinapur and Rupar) was noticed in Period II. This find was a semi-circular grey-ware object, with its convex sides meeting at the apex of a lenticular section and the interior hollow space divided into two portions. Besides copper, iron was prevalent, the assemblage included a spear-head, a barbed arrowhead and nails or pins. Among other finds, mention may be made of dice, styli, pins, arrowheads of bone, small reel-shaped discs of black jasper and glass beads. Except a fragmentary mudwall, no structure was noticed. However, large lumps of clay, sometimes burnt, with red impressions, suggested that the houses had also been built of reeds plastered over with a thick layer of clay.

Period III

Again after a gap, we come across Period III, characterized by unlined soakage well, kiln-burnt bricks of size, 12½ × 12½ × 3¼ inch; all bore three-finger frog-marks. Mud bricks of uncertain dimensions were also noticed. The average thickness of this level was less than a foot.

Early historic potteries were found, which included the pear-shaped jar, jar with an externally-flattened rim and vertical neck, cooking-basin with a nail-headed rim, bowl with an inturned rim, vase with an elongated pear-shaped body and flat base, and lid (?) with lamps along the rim.

Period IV

The last period, Period IV, belongs to the late seventeenth or early eighteenth century, represented by glazed ware, carinated *handi*, miniature lamp, lid with tapering sides, and a wall and a floor built with *lakhauri* bricks.

Assessment

The above findings reflect that the four Periods of Alamgirpur belongs to the Harappan, Painted Grey Ware, early historic and late medieval periods respectively. Period I, though containing "unmistakable traits" of mature Harappan culture, "might still have belonged to its late phase, as is suggested by certain elements not present at the type-sites" (*IAR* 1958-59 : 55). The Period I has been dated to 1700 B.C. to 1300 B. C. (Dikshit 1982:339-51) onwards. Similarly, the Period II, seems to represent the late phase of the PGW culture. This is believed due to occurrence of abundant iron, low percentage of PGW (as if the Ware had been on the decrease) and certain pottery types associated with the NBP deposit (such as the semi-circular grey-ware object, with its convex sides meeting at the apex of a lenticular section and the interior hollow space divided into two portions which is associated at with NBPW Hastinapur and Rupar). Regarding Period III, T. N. Roy (1983 : 33) suggests that the find of pear-shaped vases, cooking vessels with nail headed rim, burnt bricks and unlined soak-wells corresponding with Period III of Hastinapur (Late Phase of NBP) indicates that the Period III of Alamgirpur represents the Late Phase of NBP (or Late Phase of Iron Age[1] – although we do not get a single sherd of NBP in this period). The site was deserted during post-NBP phase.

It appears that during the Late Harappan period, the Harappans brought with them certain traits of mature Harappan culture but they were quickly losing these traits. The characteristics features of mature Harappan culture, such as planned settlements, and seals are missing. After a break the site was occupied by people representing the Late Phase of PGW. In the context of Period III, T. N. Roy (1986 : 41-42) states that Alamgirpur represents both the Middle and the Late Phases of the Iron Age (i.e. Late Phase of NBP). The absence of NBP, ring wells and structures of burnt bricks, coins etc. along with flimsy nature of habitation (having an average thickness of even less than 30.5 cm) show that it was not urbanized during the Late Phase. Being away from the trunk route and also from the perennial source of water, in contrast to Hastinapur in the same district of Meerut, it remained a village settlement of the Iron Age. These could be also the reasons for breaks in between all the periods. Lastly, the site might have been named after the well-known surname of Aurangzeb, Alamgir. This further suggests that the last period, Period IV, might be regarded as belonging to the late seventeenth or early eighteenth century (*IAR* 1958-59 : 55).

Allahapur (28° 45′ N latitude, 77° 24′ E longitude)

This site lies on the left bank of the river Hindon, about 13 km west of Muradnagar in the Meerut district. The nearest village is Surana. The site was excavated (*IAR* 1970-71 : 40-41) under the guidance of Romila Thapar, K. N. Dikshit, assisted by R. P. Sharma and O. Manchanda. The excavations brought to light a total deposit of 2.8 metres representing two cultural periods. Period I, was further divided into Sub-periods IA and IB.

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[1] T. N. Roy, in his work, *The Ganges Civilization* (1983), points out that in between Saka-Kushan level and the Chalcolithic culture lies an Iron Age deposit divisible onto two phases: Early Phase of Iron Age and the Late Phase of Iron Age. On some sites the Early Phase of Iron Age is represented by the PGW culture (in which PGW is the dominant attribute), on others, by the overlap phase of PGW and NBP and on some sites by the early Phase of NBP culture (in which NBP is the dominant attribute). During this phase structures of baked bricks and system of coinage are absent but iron is introduced from the very beginning. Historically it is pre-Mauryan and is pre-urban in nature.
The Early Phase of Iron Age is succeeded by the Late Phase of Iron Age. On some sites this is represented by the structural phase of NBP while on others by defence phase. In this deposit, the black-and-red, black slipped and PGW of the preceding phase almost disappears but NBP continues, but its frequency is less. The characteristic wares of this phase are coarse grey, coarse NBP and red wares of different fabric and shapes. The phase was culturally more prosperous. This is reflected by the introduction of structures of baked bricks, ring wells, drains, and soak pits and fortifications. Historically this is Maurya-Sunga period and archaeologically it is the Late Phase of NBP.
The Late Phase of Iron (or NBP) is succeeded by post-NBP phase. The NBP is absent during this phase and is characterized by presence of a different pottery of the early Christian era including the Red Polished Ware. This phase covers the period from the beginning of the Christian era to the third century A.D. Historically it is coeval with Saka-Kushan Period.

Period 1A

Period IA, was marked by the presence of plain black-and-red ware, PGW and black slipped ware. The total thickness of this phase is about one metre. In the early levels of this phase, plain black-and-red ware predominates but in the upper levels, PGW dominates and black-and-red ware decreases. The shapes in both these wares are same. The black-slipped ware was very restricted in quantity, while the associated red ware types are mainly those which are reported from the PGW levels of Hastinapur. Iron, terracotta and bone objects, such as arrowhead, awl, and stilus, also constituted the material remain. Charred bones along with horns were also found. Since the objects of bone and antler were large indicating presence of a bone and antler industry, a detailed techno-typological study has been made by K. N. Dikshit (1970-71 : 51-55). As far as the structural remains are concerned, they were found in the form of closed and open-mouthed hearths, mud floors with post-holes and burnt reed-impressed mud plaster.

Period IB

In Period IB, all the wares of the preceding phase continued except black-and-red ware. The PGW continued and did not show any degeneration either in fabric or in paintings. Although no NBP was found, but the phase was marked by the presence of some of the basic traits of the NBP assemblage, such as burnt bricks, discs, iron objects like spear-head, arrowhead, blades etc., beads, copper nail parer, awls, kohl-sticks, bone points, stone querns and pestles. The red ware types such as bowl-cum-lid, basin, deep bowl and jars were of Hastinapur NBP affinity. An inscribed terracotta seal, palaeographically, assignable to late Mauryan character reading *Bhadrapalasa*, was reported from the upper levels of this phase. The use of baked bricks of different sizes (33 × 16 × 5.5 or 39 × 19.5 × 5) with rice husk as a *degraissant* was noticed. Remains of a few mud walls, a circular mud walled room containing some hearths, burnt floors, post-holes and also baked bricks were the other structural remains.

Period II

The remains of this period have been reported as "flimsy" in nature. The occupational deposit of this phase is about 40 cm and is represented by painted red ware assignable to the early Christian era.

Assessment

Allahapur is a type-site of the Upper Ganga Plains where PGW has been reported in two contexts, Sub-period IA and Sub-period IB. T. N. Roy (1983 : 32-33) points out that, "Sub-period IA represents the Early Phase of the Iron Age in which we get black-and-red, black slipped, PGW, iron and red ware assemblage of Hastinapur II. Thus it is coveal with the PGW phase of Hastinapur except that in the early layers of Sub-period IA there is a preponderance of black-and-red and black slipped wares. This fact, however, provides a link with the separate phase of black-and-red ware noticed at other sites like Atranjikhera, Jakhera, paster, Nod and Jodhpura. Sub-period IB contains all the basic traits of the Late Phase of NBP and consequently that of the Late Phase of Iron Age. The continuation of PGW without any degeneration in fabric and painting in this phase i.e. up to circa 300 B.C. and the absence of NBP from this deposit are new features of this site". Like Alamgirpur here also, although the late phase of the deposit contains unmistakable traits of the late phase of NBP, it is devoid of NBP sherds. The absence of coins, NBP sherds and presence of insignificant remains of baked brick structures show that the site was a rural village settlement during the Late Phase of Iron (or NBP) Age. In this context T. N. Roy points out that being away from the perennial source of water and also from the trunk route, the site was not urbanized during the Later Phase of its occupation. This may be the reason why it was not inhabited fully in Period II i.e. in post-NBP period. Throughout its occupation it remained a village settlement of the Iron Age (1986 : 45). The presence of a bone and antler industry represented by the presence of several unfinished and bone objects indicate that the bone tools were locally manufactured and this also indicate, as K. N. Dikshit (1970-71 : 51-55), points out that it was a village of bone-tool makers who supplied the tools to other nearby settlements. And, if it was a "village of bone-tool makers", then, the economy of this village seems to be supported by a bone and antler industry, and the village might not have a self-sufficient closed economy. The possibility of inter-regional economic exchange cannot be negated. Further, that the existing economy of the village was robust enough to sustain the settlement in the area for long is proved when K. N. Dikshit points out that it seems probable that the PGW phase at Allahapur flourished for a longer period in comparison to other sites in the Upper Ganga-Yamuna doab because it clearly overlaps with the Mauryan levels. Here it should be noted that the countryside was well populated in the past by the hordes of deers. Dikshit also points out that the arrowheads of bone and iron are mentioned in the *Rigveda* and the *Samhitas*. Kautilya (bk.11.Ch.18) also mentions 5 kinds of arrowheads made of bone, iron and wood. It was a common practice to smear poison on the top of the arrowhead.

Regarding the chronology of the PGW, K. N. Dikshit in his article *The Allahapur Evidence and the Painted Grey Ware Chronology*, (1973 : 148-53) concludes that "the radiocarbon dates and the Iron Age association of the PGW prove that the antiquity of the PGW cannot be pushed beyond *c.* 800 B.C. The NBPW in western Uttar Pradesh does not represent a cultural break from the PGW; it appears towards the later phase of the PGW assemblage. Conversely, the PGW continues without any change of frequency event upto the Mauryan levels at Allahapur. Apparently evidently, this also shows a fairly long duration of about 400-500 years for the PGW culture. As the PGW assemblage continued to exist upto the Mauryan times, the beginning of this culture cannot be pushed beyond *c.* 800 B.C."

Ambkheri (29° 44′ N latitude, 77° 58′ E longitude)

Ambkheri is situated in the Roorkee Tahsil of the Saharanpur district. There are two sites at Ambkheri, Ambkheri I and Ambkheri II. Ambkheri II was excavated in 1963-64 under the guidance of M. N. Deshpande, K. N. Dikshit, Shankar Nath, H. K Narain, and R. P. Sharma (*IAR* 1963-64 : 56). The excavations brought to light a single-culture occupation representing the Ochre Coloured Ware. Many previously unknown pottery-forms and antiquities showing affinities with the Harappan tradition were noticed. No copper objects were found.

The OCP was inadequately fired and was usually bereft of any slip. The main types in thick fabric included the large trough, bowl-like lid with central knob, dish-on-stand, vase with flanged rim and oval body, ring-stand, basin with undercut rim and vase with chord-design, mat-impression and horizontal raised bands on the exterior. Thin fabric shapes included long-necked flask with flaring rim and flat base, lid with central knob, bowl with slightly out-turned rim and bulbous body and miniature cup and vase. Associated with this pottery was a washed grey ware represented in thick, medium fabric. Other finds include: a carnelian bead, terracotta objects like cart-wheel with a central hub, animal figurines including humped bull, a fragmentary cake with oval depressions, and stone saddle-querns with pestles. Remains of a brick-kiln and a hearth were also found.

The Ambkheri II assemblage shows affinities with Harappan remains from Alamgirpur, Bara, Bargaon and Rupar. "Among the probable links may be mentioned terracotta cakes, terracotta humped bull and a few pottery-shapes, such as the dish-on-stand, lid with central knob and chord-impressed and incised decoration" (*IAR*: 1963-64: 56).

Assessment

A school of thought represented by Ghosh (1964) and Possehl (1980), argue that OCP represents a degenerate form of Late Harappan pottery. However, another group of scholars represented by Lal (1954-55), Dikshit (1979) and Gaur (1982), is of the opinion that the OCP represents an independent culture with the influence of the Harappan ceramic tradition. In this context it should be pointed out that the OCP found at Lal Qila, Saipai and Atranjikhera does not show any Late Harappan ceramic influence. The contact between the Late Harappan and OCP is confined only to the Saharanpur district, represented by sites like Ambkheri, Bargaon and Bahadarabad. Nevertheless, one can safely conclude that in any case the OCP culture is contemporary to the Late Harappan culture.

Bargaon (30° 04′ N latitude, 77° 34′ E longitude)

The site is situated 24 km. North of Saharanpur on the left bank of the Maskara, a tributary of the Yamuna. M. N. Deshpande, assisted by K. N. Dikshit and Shankar Nath undertook the excavation (*IAR,* 1963-64 : 56-57) of the site. The excavation brought to light one metre thick occupational deposit representing the Harappan pottery together with the unslipped Ochre-Coloured Pottery, assigned to the period between 1300 B.C. to 1000 B.C. (Dikshit 1982 : 348). The main shapes included: the dish-on-stand, bowl with featureless rim, lid with central knob, Indus goblet, ring stand, miniature pedestalled cup, long-necked globular flask, and vase with chord-impressed designs and incised bands on the exterior. Some of the potteries were also painted, with designs, such as cross-hatched triangles set within horizontal bands and wavy lines in the upper levels, and only horizontal bands in the lower ones. Incised decoration having deeply-cut chevrons, wavy lines drawn by a comb-like object and small oblique strokes were also noticed. Other noteworthy finds include: copper rings, chert blade, weights, bull-headed terracotta toy-carts, and terracotta cakes with finger-impressions. No structure was noticed.

At Bargaon, remains of Copper-Hoard culture were also noticed (Lal, Makkhan 1984: 34)

Assessment

The finding of the Late Harappan Ware along with the unlispped Ochre-Coloured Ware shows the relationship between the two.

Behat (30° 20′ N latitude, 77° 34′ 20″ E longitude)

As pointed out earlier, the beginning of archaeological studies in the Yamuna-Hindon doab goes back to two articles written by P.T. Cautley (*JASB* III 1834 : 43-44, 221-27), an irrigation engineer, in 1834 about the ancient site of Behat. The site is in the Saharanpur district, 17 feet below the present surface of the country and upwards of 25 feet below that of the modern town of Behat. Cautley gave considerable significance to the understanding of the location of the site in relation to its contemporary landform. The significance of the site and Cautley's work was further highlighted by James Prinsep's (*JASB* III 1834 : 227-228) dating of the site in the early Centuries A.D. on the basis of the numismatic evidence. Fuhrer (1891 : 14) reports that numerous coins of Indo-Scythic origin with Baktro-Pali inscriptions and other Buddhist remains were found at Behat.

Hulas (29° 43′ N latitude, 77° 22′ E longitude)

Hulas is situated in the Nakur Tahsil of the Saharanpur district. K. N. Dikshit excavated it in 1978-79, 1979-80, 1980-81, 1981-82 and 1982-83. The site is about 5 metres above the surrounding plains and measures about 330 metres north-south, and 172 metres east-west.

Period I

The occupational deposit of Period I is 1.4 metres (*IAR* 1982-83 : 100), spread over 2000 sq m, and is represented by the Harappan ware as well as some non-Harappan wares, indicating the period between 1700 B.C. to 1300 B. C. (Dikshit 1982 : 339-51). In the lower phase, coarse red ware, a non-Harappan ware having a marginal contact with Harappan pottery was noticed. But in the middle phase, Harappan pottery dominated a sherd having three concentric circles with loops and dots over the cream surface similar to the polychrome ware reported from Surkotada. In the upper Phase, Harappan pottery continued with painted designs. Miniature pots dominated this phase. The main ware types include new forms, such as dish-on-stand with drooping rim, jar with horizontally splayed out rim, bowl-like lid with central knob and a few miniature pots with a ring or pedestalled base. The painted motifs executed in black comprised simple bands, triangles, rows of hatched diamonds with horizontal bands, leaf-patterns, dancing peacock with hatched body. The incised decorations on the exterior of the pots include a set of wavy lines, sigmas, chevrons and cord impressions. However, the number of incised sherds is not very significant. Characteristic Harappan pottery forms, such as the dish with a projected rim and carinated shoulder, or the globular vessel with a flange round the neck, or shallow dish with an incurved rim or the jarstand with a concave profile are rare at Hulas. Alamgirpur types 15, 16, 21, 22 and 23 are absent (*IAR* 1958-59: Fig. 4). Other finds include: terracotta objects, such as beads, bangles, animal figurines, cart-wheel with raised central hub, faience beads and bangles, beads of agate, fragmentary copper bangles, bone points, stone querns and pestles. The terracotta cakes were oval in shape with pointed ends, although other varieties like the rounded ones with deep finger impressions in the centre were also found. These finds show a close affinity with the Harappan findings from Bargaon, Bhagwanpura, Bara and Sanghol.

An oval-shaped hearth was encountered at the southern edge of the habitation. It contained a dish-on-stand and a fragmentary baked brick showing husk marks, which was used as *degraissant*. A solid mud structure noticed, which was possibly built as a protection against the floods. A ditch or rain-gulley was also noticed. Fragmentary burnt-bricks with finger impressions, evidence of hut-dwellings in the form of reed impressed burnt plaster, patches of burnt-floor with circulat-pit activities, beads of semiprecious stones were also encountered. A pit lined on the two sides by mud-bricks of 48 × 26 × 7 cm size was noticed in which a terracotta object with two bifurcated curved terminals, as if of snake-hood, the examples of which were also found in earlier works, was noticed along with Harappan pots, such as a dish with a ring-base and a long bone piece. Although the evidence is too meager, it seems to be probably used for religious purposes. A terracotta seal bearing three signs of the Indus script was also found. Other important finds were terracotta objects, such as humped bull, faience and bangles.

Among the structural remains, a total of 43 structures of different phases were noticed. Five belonged to the earlier phase, 32 to the middle phase and the rest to the upper Phase. Out of the five structural levels, Harappan strata revealed three successive living usages. The rectangular and brick houses conforming to the Harappan tradition were confined to the earlier phase. The food plants (*IAR*: 1986-87, Page 132) known to Harappans in the area include: among cereals rice, barley, bread-wheat, club-wheat, oat, *jowar*, and finger-millet (*ragi*); among pulse crops lentil, field pea, grass-pea or *khesari*, *kulthi*, green-gram or *moong*, chick-pea or gram, a broken seed cons-pea; among dry fruits, almond and walnut. Other important finds include a carbonized seed of cotton, a few broken pieces of hard seed coat of castor in uncarbonized state, remains of wild taxa, caryposes of a grass, seeds of *Coccinia grandis* which is a wild cucurbit locally known as *kundru*, a few broken pieces of the fruits *Hapanthodium* inflorescence in botanical terms, belonging to either *papal* or *gular*. A single thermoluminescence date from the upper phase is 1200 B.C. The Harappans might have continued for another 100 years.

Period II

Period I was followed by period II possessing PGW culture. The PGW inhabitants did not settle on the area deserted by the Harappans, instead they settled on the virgin soil lying to the north-east of the Harappan settlement. This period yielded PGW, plain grey, black-and-red, black slipped and associated red wares, bone points, iron slags, antimony rods, terracotta disc and *ghata*-shaped beads of terracotta. A strap-handle in black ware and a bowl with a flat disc base in PGW was a new variety. A mud floor with post-holes was also found. T. N. Roy (1983 : 120-121) points out that Hulas (together with Allahapur and Alamgirpur) does not represent any pre-PGW deposit (such as black-and-red ware). So the PGW deposit on the basis of the archaeological date proposed for Hastinapur II (at Hastinapur, PGW has been placed by B. B. Lal within the limits of 1100 B.C. to 800 B.C.) also cannot be dated earlier than 7th-6th centuries B.C.

Period III

The occupational deposit of the Period III is 70 cm. In the Period III deposit, besides a few NBP, black slipped ware, grey ware, the associated red ware comprised of Ahichchhatra 10 A (*IAR* 1963-64 : 43-44) and Carniated *handi*, wedge-shaped bricks and a hearth, represent the structures of period. Other finds include: an eye-goddess made of tortoise shell, terracotta objects (such as beads, wheels, human and animal figurines), stone balls, bone points, and beads of glass and carnelian.

Period IV

Period IV, having 1.4 metres thick occupational deposit, was represented by Sunga-Kushan pottery types, such as plain and incised red ware. The main types include spouted jars, lids, sprinklers, bowls, storage jars and basins. A massive baked brick structure was also noticed. The wall of the structure had width of about 2.1 metres the size of the bricks was 52 × 28 × 8 cm. The height of the wall was 66 metres, with eight courses of bricks. Notable finds include: beads of semi-precious stones, copper coins, shell bangles, terracotta objects, such as plaque showing mother with child, beads, bangles, sealings, animal and human figurines.

Period V

Period V, having occupational deposit of 70 cm, represents the period from Gupta to early medieval. The important finds of this period include: moulded bowls, walls of burnt bricks and mud bricks, and a few furnaces. Forty-two copper coins associated with medieval structures were also noticed.

Assessment

According to Dikshit, Hulas represents a late mature phase of Harappan Culture in western Uttar Pradesh, dated between c.a. 1700 B.C. to 1300 B.C. At Hulas, the Harappans originally occupied a natural hill or hillock. However, since the threat of flood would have been there, later, a solid mud platform was constructed running northeast/southwest. In Hulas, the Early Phase of Iron Age corresponds with Period II i.e. the PGW culture. However, there is no indication of any pre-PGW, black-and-red ware phase. Moreover, there is a definite overlap of the PGW and NBP deposits. This indicates that the people of the PGW culture did not occupy the deserted portion of the Harappans and settled right on the natural soil to the north-east of the Harappan settlement. There is also a ditch or ancient rain gully at the depth of 4.3 metres from the surface of the trench lying in the middle of the mound and demarcating the two settlements. Period III, which overlapped with the PGW deposit in the earlier levels, indicates an Early Phase of NBP that is not well recognized at the site. But on the basis of other traits of NBP, such as carinated *handi* and structures of burnt bricks (Ahichchhatra 10 A) we can say that it is coeval with the Late Phase of NBP. The NBP settlers expanded the area occupied by the PGW settlement. Period IV is post-NBP, represented by Sunga-Kushan antiquities. During the Kushan period, the settlers occupied the area covered by both Harappans and PGW settlers. Period V represents the phase from Gupta to early medieval times. The massive burnt-brick wall probably represents a wicket gate. On the basis of the remains brought to light, one can say that Hulas represents an urban material culture throughout the period of its occupation.

K. N. Dikshit (1985 : 55-61) points out that the settlement pattern of the Harappan and PGW settlements at Hulas conforms to the situation observed in the Ghaggar Valley in northern Rajasthan and Haryana but differs from the Hindon river area (type site: Alamgirpur) and Sutlej Valley (type site: Ropar).

Mandi (29° 26′ 10″ N latitude, 77° 34′ 35″ E longitude)

The Mandi village is in the Muzaffarnagar district. It is two metres high above the present ground level and is about 10 km east to the Hindon river and about 20 km west to the district headquarters. It comes under Titawi Police Station in Tehsil Sadar. A metalled road that branches off after Baghra village from the Muzaffarnagar-Shamli road, leads to Mandi. On the 1st June, 2001 an anonymous person informed the police that gold jewellery were discovered from the field of Anil, son of Satpal Jat in Mandi village. The local police recovered about 10 kg of jewellery from the site. D. V. Sharma, V. N. Prabhakar, R. Tewari, and R. K. Srivastava subsequently examined the site. Their examination (Sharma 1999-2000 : 36-41) revealed that probably the present village is settled on the southern portion of an ancient mound. Villagers report that burnt-brick measuring 31-33 × 21-23 × 9-11 cm are generally found while digging the field. Pottery types similar to Hulas and Alamgirpur along with burnt-bricks were collected during exploration in the area. The pottery is mainly of three types; plain red ware, painted red ware and grey ware having thick core manufactured with well levigated clay and adequately fired. The main types in sturdy red ware and grey ware pottery include dish-on-stand (?), neck portion of vases with horizontally splayed out rim, dish with drooping rim and marked by a carination below the rim, nail headed basins and dishes, vessels with externally thickened beaked rim, etc. These shapes resemble the Harappan pottery found from Hulas and Alamgirpur. A few painted designs like *Peepal* leaf, horizontal register of bands executed in black colour were also noticed.

A few shapes in red ware of medium to fine fabric like bowls with in-turned carinated rim and flat base, bowls with flared rim, bowls with straight or vertical featureless rim, thick storage jar were also noticed. These shapes represent the Kushana-Gupta and later periods.

The bricks measure 8 × 22 × 31 cm, 9 × 23 × 33 cm, and 9 × 20 × 30 cm. Though these bricks appear to be related to the earlier phase, it is difficult to ascertain their precise cultural association at this stage. Some bricks also have finger impressions.

The hoards included beads made of gold (spacer beads, circular beads, hollow terminal beads, single and double bell shaped beads, and disc beads), banded agate, onyx, and copper. A large number of etched cornelian beads with trefoil and eye designs were also noticed. Two copper containers kept along the beads were also found.

Spacer beads of gold have been located from Mohenjodaro and Lothal. Bronze spacer beads are found in Allahdino hoard. Copper Spacer beads are known from Mohenjodaro and Harappa (Sharma 1999-2000 : 36-41).

The shape of copper containers resembles to that of earthen vessel containing the Allahdino hoard (Sharma 1999-2000 : 36-41).

Thus, it appears that several of the findings from the lowest levels of the find-spot of the Mandi hoard have Harappan affinity and are comparable to the cultural remains from Hulas and Alamgirpur.

R. S. Bisht carried out a limited excavation (Sharma 1999-2000 : 40, footnote) at the find-spot of the hoard and found that the site was highly disturbed due to leveling operations and treasure hunts. The total occupational deposit was 65-80 cm. The excavation revealed about 500 gm of jewellery consisting of circular wafer beads, spacers, conical beads, and beads of banded agate, microsteatite, faience beads, a few terracotta sling balls, terracotta animal figurines, terracotta beads, broken silver pieces, and arecanut shaped terracotta beads. A kiln was also exposed. A burnt-brick structure measuring 97 × 90 cm was also revealed. The structure has three courses and runs in northeast-southwest direction. The bricks used therein measure 36 × 22 × 10 cm. Burnt-bricks with finger impressions were found. As discussed earlier, similar bricks have been reported from Period IV, post-NBP phase, of Kaseri and Baragaon in our study region.

Assessment

Thus, the cultural remains of Mandi represents broadly two cultural phases:

1. Late Harappan contemporary to that of Hulas and Alamgirpur placed between 1700 B.C.-1300 B.C., and
2. Kushan period of 100 A. D. onwards.

PART II

DISTRIBUTION AND SETTLEMENT PATTERN IN THE YAMUNA-HINDON DOAB

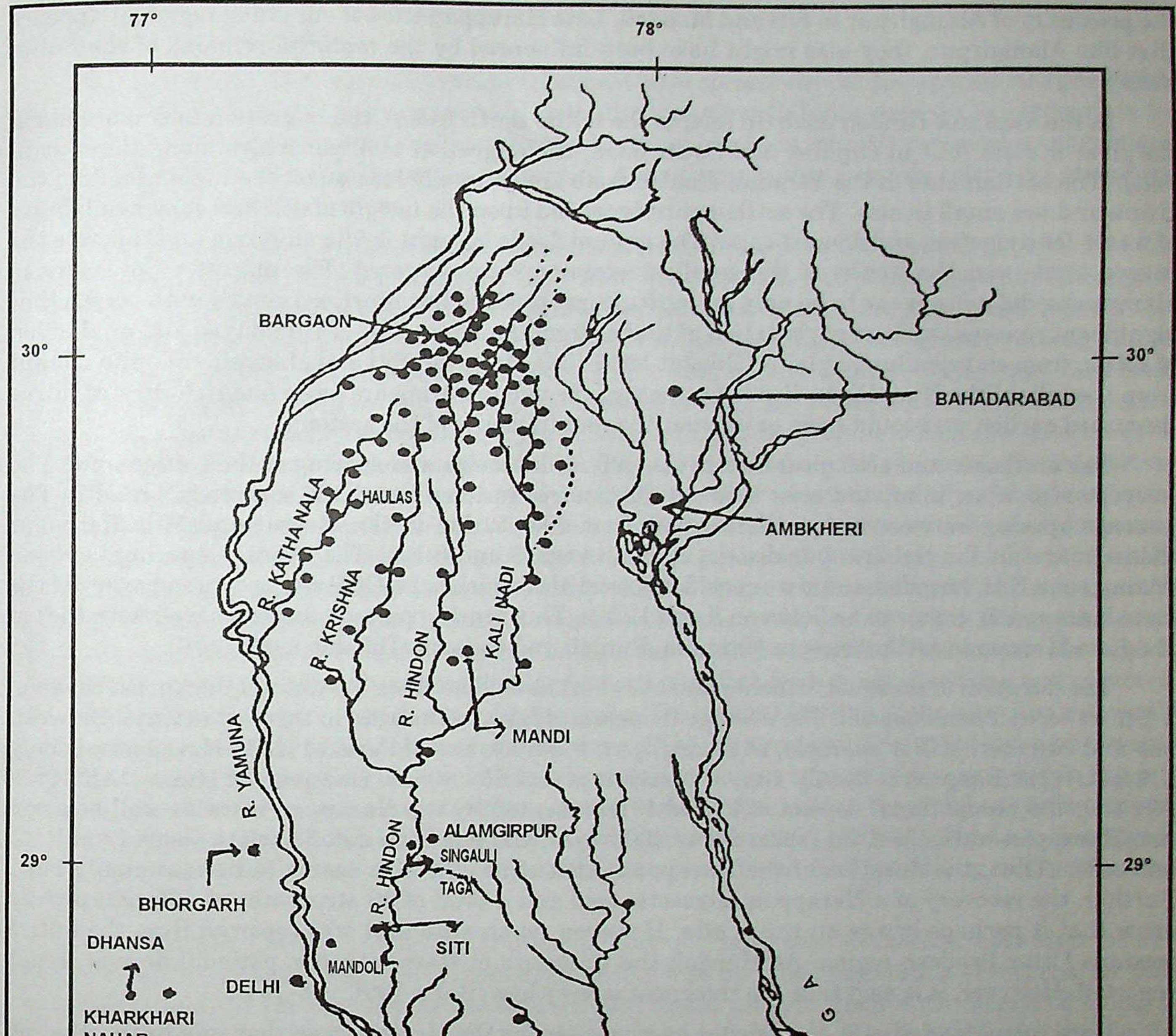
Here is an attempt to move in time and space at a macro level and thereby present a broad picture of the settlement pattern of the Yamuna-Hindon doab, with particular emphasis on the study region.

LATE HARAPPAN CULTURE

Settlement Pattern

From the findings of other regions of north India, particularly from Manda in Jammu and Kashmir; Kotla Nihang Khan, Ropar, Chandigarh, Bara, Dher Majra, Sanghol, Katpalon, Nagar and Dadheri in Punjab; Mitathal, Banawali, Balu, Mirzapur, Daulatpur and Bhagwanpura, Nachauli in Haryana; Bhorgarh, Mandoli, Kharkhari Nahar and Dhansa in Delhi, and the concentration of more than 130 Late Harappan sites on the rivers Maskara, Nagdeo, Katha Nala, Krishni, Kali Nadi, Hindon and Yamuna, it appears that the Late Harappan settlements in the Yamuna-Hindon doab were established by way of migration from the adjoining Haryana and Punjab regions where the Harappan settlements had been established from a much earlier period (Dikshit 1985 : 58).

K. N. Dikshit opines that the Harappan culture complex at Alamgirpur and Bargaon were found more influenced by the material remains of Sutlej Valley, whereas Hulas appears to have its mooring in the Sraswati-Drishadvati complex of Haryana (Dikshit 1985 : 57). He further points out that the characteristics traits of Kotla Nihang Khan possibly influenced from Harappa continued at Ropar, Alamgirpur and Bargaon but in a diminished manner, whereas the cultural gamut of Banawali, Balu and Mitathal IA was an extension of central Indus-Kalibangan complex and extending to Mirzapur, Hulas and Daulatpur. Thus, in the Yamuna-Hindon doab both these cultural waves are present and it appears that in the doab only late mature phase entered and survived. And, owing to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Map 5

Late Harappan Sites in the Yamuna-Hindon Doab and Its Neighbourhood the proximity of Alamgirpur to Siti and Mandoli, Late Harappan sites of our study region, it appears that like Alamgirpur, they also might have been influenced by the material remains of the Sutlej Valley.

In the Yamuna-Hindon doab (in fact, in the entire north India), the migration took place along the river system (but in Gujarat and Saurashtra, the migration took place also along the coastal belt). The settlements in the Yamuna-Hindon doab are generally located on the higher bank of the rivers and are small in size. The settlements depended upon the nature of soil and easy availability of water for irrigation and domestic use. The annual floods brought fertile alluvium and this was the reason that even the banks of the smallest streams were occupied. The migratory pressure of Harappans did not appear to be only for agricultural produce but must be coupled with some other significant reasons, such as exploitation of timber from the forest hills of Himalayas and production of cotton from clayey alluvial plains (Dikshit 1985 : 56). However, Siti and Mandoli are quite distant from the hills of the Himalayas. But nevertheless, the neighbouring area also had rich vegetation, as discussed earlier, and could have easily met the requirements of the settlers.

The economic and ecological factors also affected the size and spacing of the settlements. The average size of an inhabited area is about 200 metres in length and 150 metres in breadth. The average spacing between two settlements is from 8 to 12 km in the Meerut and Muzaffarnagar districts and in the Saharanpur district it is between 5 and 8 km. The average spacing between Alamgirpur, Siti, Mandoli and if we consider Kaseri also which is an OCP site, a contemporary of the Late Harappans, comes to be between 8 and 12 km. This spacing pattern conforms well with that of the Late Harappan settlements in Haryana, Punjab and Gujarat (Dikshit 1982 : 346).

The duration of these settlements must be short as evident from the limited thickness (between 1-2 m) of occupational deposit. The average thickness of Harappan strata in this region varies between one and two metres. For example, at Alamgirpur, the thickness of Period I (Late Harappan) is only 1.8 metres, at Bargaon it is only 1-m, at Mandi it is just 65 - 80 cm. However, at Hulas (*IAR* 1982-83 : 100) the occupational deposit of Period I (represented by the Harappan ware as well as some non-Harappan wares) is 2.5 m, spread over 2000 sq m, and has been dated back to about 1700 B. C. onwards. Thus, the duration of the Harappan settlement at Hulas seems to be reasonably long. Further, the recovery of a Harappan terracotta seal and a total of 43 structures of different phases show that it perhaps it was an urban site. However, no steatite seal was reported from the entire western Uttar Pradesh region. At Mandoli the thickness of Harappan occupational deposit is not reported. However, it is said that the thickness is very less (Babu 1996 : 98-104).

If we take Mandoli and Alamgirpur as type sites for the Harappan settlements in the Meerut and Ghaziabad districts it appears that the extensive and large sites are absent in this area. Only medium and small-sized sites are present. The average size of the settlements (200 metres in length and 150 metres in breadth) show that they belonged to small cluster of families. One can notice both the linear and circular pattern of settlement along the alluvial strip flanking the Yamuna and its tributaries, on higher grounds ensuring safety against the frequent floods and follow the drainage lines and the nature and degree of slope.

In Haryana, Harappan settlements are closely connected through networks of towns and villages around them but in Punjab and western Uttar Pradesh in the absence of large settlements, the cultural complex cannot be viewed from the point of urban network (Dikshit 1985 : 57). The environmental and economic factors play a crucial role in determining the settlement pattern including the emergence of urban centres.

Subsistence Pattern

Food and Plant Economy

The plains of the Yamuna and its tributaries must have opened vista to Harappans for agricultural produce. Alluvial loam soil and calcareous clayey alluvium of north India were quite appropriate for the production of cotton. In western Uttar Pradesh, cotton has been recently replaced by sugarcane. The cloth impression on the Harappan pottery at Alamgirpur points towards cotton as one of the possible attraction of this region.

A few potsherds and carbonized seeds and fruits from Hulas have brought to light rich food and plant economy enjoyed by Late Harappans (*IAR* 1986-87 : 132). The food plants known to Harappans in the area include: among cereals rice, barley, bread-wheat, club-wheat, oat, *jowar*, and finger-millet (*ragi*); among pulse crops lentil, field pea, grass-pea or *Khesari*, *kulthi*, green-gram or *moong*, chick-pea or gram, a broken seed cons-pea; among dry fruits, almond and walnut. Other important finds include a carbonized seed of cotton, a few broken pieces of hard seed coat of castor in uncarbonized state, remains of wild taxa, caryposes of a grass, seeds of *Coccinia grandis* which is a wild cucurbit locally known as *kundru*, a few broken pieces of the fruits *Hapanthodium* inflorescence. The interesting points to be noted here are that the Late Harappans possibly adopted rice when they settled at Hulas. The ornamentation pattern of the rice husk on the burnt mud-plaster has revealed characters common between the cultivated rice *O sativa* and the wild perennial *O rufipogan*. Un located on the Katha Nala in the Muzaffarnagar district has also yielded wild rice, which are believed to be immediate ancestor of the cultivated species *O sativa*. It appears that the food economy of the Harappans could have provided them with a balanced vegetarian diet: carbohydrates derived from cereals like wheat, barley, millets, etc., proteins from peas, horsegram etc., and fats from seeds of sesame and mustard. They would have also consumed fruits, such as jujube. The natural fertility of the alluvium soil would have been exploited for subsistence, just as was done till the recent past. The Late Harappans would have practiced mixed cropping of cereals, like wheat and barley, as is practiced even today in Punjab, Haryana, and Uttar Pradesh as a protection against weather hazards so that if wheat fails to ripen, the hardier barley is sure to yield (Mittre, Vishnu and R. Savithri 1982 : 205-21). The Late Harappans in the Yamuna-Hindon doab and its neighbourhood seems to be food producing village farming communities.

B. K. Thapar (1982 : 11), in the context of mature Harappan civilzation, says that human control of alluvium must have been planned by leaders who had the imagination of returns, for they had calculated that productivity of the alluvial silt would provide them with means of living in comparative affluence, if not leisure. If we consider the concentration of Late Harappan sites in the Yamuna-Hindon doab and its neighbourhood, one can say that probably a similar plan would have been made by the leaders, which would have ensured stability in the region, if not prosperity.

Domestication of Animals

Regarding domestication of animals during the Late Harappan period in the region, Bhola Nath and M. K. Biswas in their article, *Animal Remains From Alamgirpur*, (1969) points out that people practiced full-fledged domestication of animals. The domesticated animals include *Canis familiaris Linn, Bos indicus Linn, Bubalus bulalis Linn, Capra hircus aegagrus Erxl, Ovis vignei Blyth, Sus cristatus Wagner*. The wild animals represented by bone specimens include *Cervusduvauceli Cev, Axis axis Erxl*. The reptilian animals represented by bone specimens include *Molluscan shells, i.e., Parreysia favidens (Benson), Viviparous bengalensis Linn*.

Structural Remains

If we take Hulas as a type-site for the Harappan settlements in the Yamuna-Hindon doab, the settlement pattern at Hulas, divisible into three phases, revealed three successive living usages. The rectangular and mud brick houses were confined to the lowest phase, whereas circular huts and rectangular mud walled houses with and without furnaces were in the middle and upper phases of occupation. However, circular huts are not found continued in upper phase. At Mandoli also, coloured rammed earth floor with post-holes in circular and arc fashion have been found (Babu 1996 : 98-104). At Alamgirpur, a mud wall and a few mud bricks were found. A few burnt bricks were found at Hulas. The scarcity of burnt bricks suggests that they may have been used only in drains or similar other ancillary structures (Lal, Makkhan 1984 : 26). The houses were probably made of wattle and daub.

Chronology

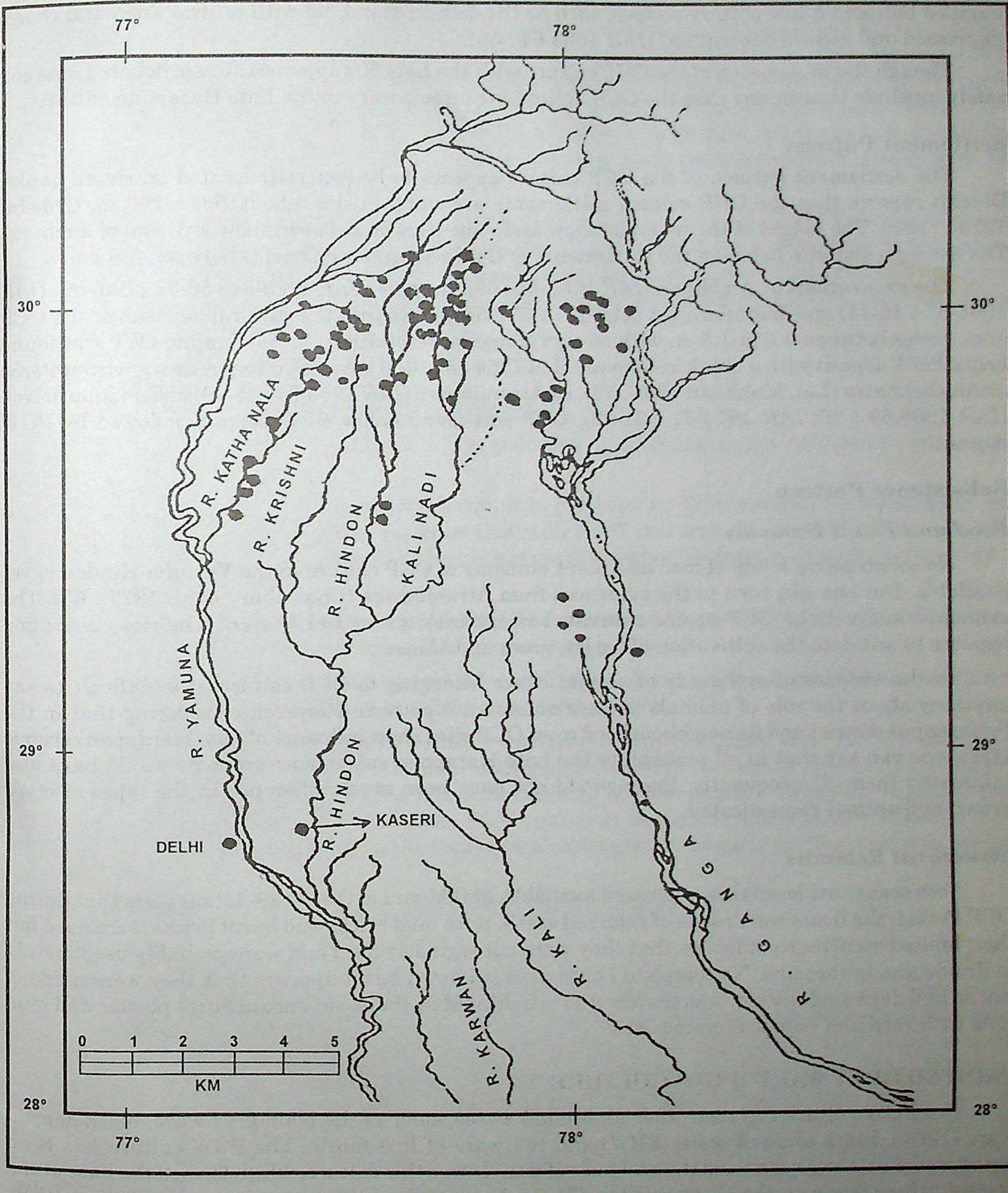
K. N. Dikshit (1982 : 339-51) has developed two phases for the Harappan complex in western Uttar Pradesh : Phase I between 1700 B.C. and 1300 B.C. and Phase II between 1300 B.C. and 1000 B.C. Phase I is represented by typical Harappan pottery, carnelian, agate and faience beads, terracotta animal figurines, triangular terracotta cakes, stone querns and pestles and burnt bricks. This phase is represented by Alamgirpur, Bhura, Kalkhatti, Tatarpur Kalan and Hulas. Dikshit thinks that the presence of inscribed pottery at Alamgirpur suggests temporal proximity to the urban phase of the Harappan culture. Phase II is characterised by the dominance of unslipped red ware, similar to OCP. It is represented at sites Bargaon, Pilkhani, Bahupur, Hardakheri, Bakaraka, Gathera and Budhakhera in the Saharanpur district. But Possehl (1980 : 16-18) has placed Bargaon and Alamgirpur together and has assigned a date bracket of 1900-1000 B.C.

However, as Makkhan Lal (1984 : 28) has pointed that, "It should be mentioned that all the sites listed in Phase II of Dikshit are reported by their discoverers as OCP sites in *Indian Archaeology : A Review*. Thus, it is premature to include these sites in the Late Harappan category and give a late date bracket. In fact, these OCP sites are likely to be contemporary to Late Harappan sites in the doab."

To summarise, as F. R. Allchin (1982 : 325-33) opines the period following the end of the Harappan cities was one of continuing eastward expansion of Indo-Aryan Culture, now associated with the cultivation of rice and with an unprecedented increase of population. Already in the east there were distinctive peasant societies, each with its culture, and thus the spread of the Indo-Aryan great tradition would have encountered these peasant societies. These factors led to rapid expansion of settlements in the upper, middle and lower Ganges Valley and paved the way for the emergence of second urbanisation. At the same time, the Late Harappan period was probably the time when the village assumed the dominant role in the Indian society which it has continued to occupy till date. In other words, the Harappan culture seems to have diffused into succeeding cultures in which should be included the Cemetery H, OCP, the Copper Hoards, and PGW. At Bhagwanpura (Joshi 1993) in Haryana, the Late Harappan came in contact with the PGW complex, while in western Uttar Pradesh it come in contact with OCP complex, for example at Bargaon and Ambkheri.

OCHRE COLOURED POTTERY (OCP) CULTURE

At present, more than 100 OCP sites have been discovered in the Saharanpur, Meerut, Bulandshahr and Muzaffarnagar districts of Uttar Pradesh. About 41% of the OCP sites in the Yamuna-Hindon doab also possess Late Harappan ceramic types. This has been noticed particularly in Bargaon and Ambkheri. The Ambkheri assemblage shows affinities with Harappan remains from Alamgirpur, Bara, Bargaon and Rupar. "Among the probable links may be mentioned terracotta cakes, terracotta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Map 6
Ochre-Coloured Pottery Sites in the Yamuna-Hindon Doab and Its Neighbourhood

humped bull and a few pottery-shapes, such as the dish-on-stand, lid with central knob and chord-impressed and incised decoration" (*IAR* 1963-64 : 56).

Though the association of the OCP culture with the Late Harappan culture is debated, one can safely conclude that in any case the OCP culture is contemporary to the Late Harappan culture.

Settlement Pattern

The settlement pattern of the OCP culture appears to be generally located on rivers banks. Dikshit reports that the OCP culture settlements are small in size, about 200 × 200 m, (Dikshit 1979b : 286). The height of the mounds is low and some sites do not even show any sign of a mound. The average distance between the settlements in the Saharanpur district is between 5-8 km.

The excavations at Ambkheri (*IAR* 1963-64 : 56), Bargaon (*IAR* 1963-64 : 56-57), Baheria (*IAR* 1966-67 : 43-44) and Bahadarabad (*IAR* 1971-72 : 54) shows that the cultural deposits of the OCP sites varies between 0.5 m-1.5 m, with no sign of regular habitation. At Hastinapur, OCP was found below PGW deposit with a break in-between (Lal 1954-55 : 10-11). A similar sequence was encountered at Ahichchhatra (Lal, Makkhan 1984 : 29). At Atranjikhera (*IAR* 1963-64 : 45-49) and Jodhpura Noh (*IAR* 1968-69 : 26; *IAR* 1970-71 : 31-32), OCP was found below BRW deposit, followed by PGW deposit.

Subsistence Pattern

Food and Plant Economy

No constructive study of food and plant economy of OCP culture in the Yamuna-Hindon is yet available. But one can turn to the evidences from Atranjikhera (Chowdhury *et al.* 1977 : 60). The evidences suggest the OCP people cultivated rice, barley, gram and *khaseri*. The rice cultivation appears to antidate the cultivation of barley, gram and *khaseri*.

In the absence of any study of animal bones belonging to OCP culture, it is difficult to say anything about the role of animals in their subsistence pattern. However, considering that in the Saharanpur district and its neighbourhood most OCP sites show influence of Late Harappan ceramic types, one can say that in all probability the Late Harappan subsistence economy would have also influenced them. Consequently, there would not have been much difference in the types of crops grown and animal domesticated.

Structural Remains

Very scanty evidences are at present available. Makkhan Lal (1984 : 29-32) suggests that during OCP Period, the floors were made of rammed earth. Both mud bricks and burnt bricks were used but their limited occurrence indicates that they were not regularly used and were probably used mainly in drains and bathrooms. No complete house plan is known but it appears that they were made of wattle and daub and the roof was thatched as is indicated by the occurrence of burnt plaster and mud clots with reed and bamboo impressions.

PAINTED GREY WARE (PGW) CULTURE

The PGW culture includes other associated wares, such as the plain grey ware, black slipped ware (BSW), black-and-red ware (BRW) and red ware of fine fabric. The PGW culture has been associated with the Aryans and the early use of iron. It was this culture, which formed the base of the second urbanization in the Ganga valley. On the basis of the substratum, one can say that BRW, BSW and PGW with iron appeared on almost at the same time in the Upper Ganga Plain (Western

UP), though BRW preceded PGW in stratigraphical chronology. In the Yamuna-Hindon doab the number of sites from where BRW has been reported is much less as compared to the number of PGW sites. In the larger Ganga-Yamuna doab the cultural deposit of the BRW is also only around 20 to 50 cm while the cultural deposit of the PGW is thicker and varies from 50 cm to 3.45 m. In the early levels of Period IA of Allahapur, plain black-and-red ware predominates but in the upper levels, PGW dominates and black-and-red ware decreases. The shapes in both these wares are same. All this indicates colonization of the plains on a much more wider lines during the PGW phase than the preceding phase of BRW.

Alamgirpur, Allahapur, Hulas, Kaseri, Mandoli, Khurd Banhera, Loni, Garhi Kalanjari, Mukari, Pashuram ka khera, Baghpat, Katha and Mandaula, all these sites have yielded significant amount of PGW, showing that during this period, the Yamuna-Hindon doab provided the required ecological, environmental, and the socio-economic base for the settlements. In fact, the entire Yamuna-Hindon doab is densely concentrated with PGW sites.

Stratigraphic Position of PGW

PGW is found in four stratigraphical contexts:

1. At Alamgirpur, Hulas and Mandoli, it is preceded by Late Harappan culture but with a gap between the two cultures.
2. At Kaseri, Hastinapur and Ahichchhatra, it is preceded by OCP culture. At Hastinapur and Ahichchhatra, there is break between OCP nad PGW cultures. However, in the excavation report on Kaseri (*IAR* : 1969-70 : 43) it is not specified whether there was a gap between OCP and PGW cultures.
3. At Bhagwanpura in Haryana, and Daheri, Kathpalon and Nagar in Punjab, the PGW has an interlocking phase with the Late Harappan culture.
4. At Atranjikhera in Uttar Pradesh and Noh and Jodhpura in Rajasthan, the PGW is preceded by the BRW culture with a break in between the two cultures.

Explaining why there is a break between the Late Harappan culture and the PGW culture at sites like Alamgirpur and why there is an interlocking phase between the two cultures at Bhagwanpura, Joshi (1993 : 24) opines that the Late Harappan culture at Alamgirpur was earlier than the Late Harappan culture at Bhagwanpura and the PGW culture at the former site was later than the PGW culture of Bhagwanpura IB. Thus, while there remained a gap at Alamgirpur, the same was bridged at Bhagwanpura.

Almost everywhere PGW overlaps with the NBPW culture.

Settlement Pattern

The settlements of the PGW culture are generally located on rivers banks. The average distance between two sites is about 10-12 km and in favourable ecological zones it is even 5 km. It is interesting to note that the average distance between Mandoli, Loni, Mandaula, Katha, and Baghpat on the Yamuna is about 8-9 km. And, the average distance between Kaseri, Khurd Banhera, Garhi-Kalanjari, Mukari and Pashuram ka khera along the Hindon River is 6-7 km. Thus, the settlements along the Hindon are more closely spaced as compared to the settlements along the Yamuna. However, the settlements along the Yamuna are bigger in size than those along the Hindon and other tributaries of the Yamuna. The habitations are basically small villages with average size of 1 to 4 hectare. The population of these villages was also moderate. However, as the villages grew up on banks of rivers, particularly those along the bigger river, the Yamuna, for various natural advantages, the need of fortification to safeguard against floods and attacks of enemies was becoming more pressing. An increase in population led to growth in the number of settlements both along the rivers and away from them.

As far as trade is concerned, none of the objects, such as copper and iron ores, and semiprecious stones like agate, jasper, carnelian, chalcedony and lapis lazuli are found in the Yamuna-Hindon doab, suggesting occurrence of trade in the area. The settlements on the Yamuna, which is better suited for transport and commerce, were perhaps mainly involved in this trade and were probably served and fed by a group of small village settlements on the peripheries of these settlements. For example, evidences from Allahapur suggest presence of a bone and antler industry. This industry could well have been a part of the local trade, in which probably apart from Hastinapur, Loni, Manduala and Katha also played an important role.

As per the spread of PGW, it must be mentioned here that the stratigraphic evidence show that PGW in western Uttar Pradesh is younger than PGW culture of Haryana, Punjab and Jammu. Thus, there seems to be an eastward movement of PGW people from neighbouring areas of Haryana, Punjab and probably Jammu into the Yamuna-Hindon doab. In spite of being extensive, PGW in Western Uttar Pradesh is homogenous and has got its own individuality. During this period a considerable portion of the country was on the threshold of urbanization.

Subsistence Pattern

Agriculture was their main source of livelihood. Due to increase in the population, large areas were brought under cultivation. Side by side, people also practised animal husbandry, hunting and fishing.

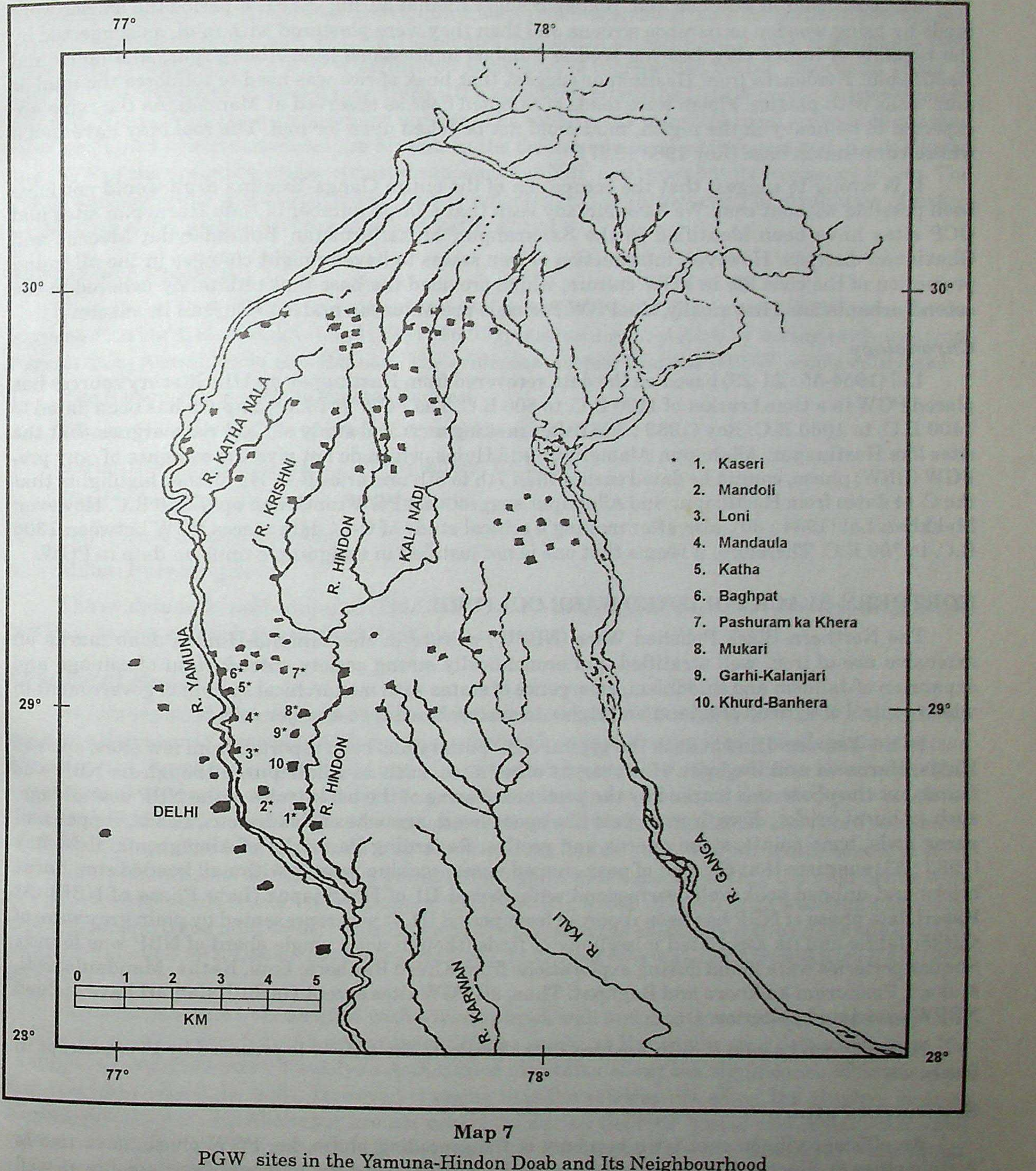
Evidences from Hastinapur (Lal 1954-55 : 123) and Atranjikhera (Chowdhury *et. al.* 1977 : 63) suggests that PGW people cultivated rice (*Oryza* sativa), wheat (*Triticum* compactum), barley (*Hardeum* vulgare), peas and some other legumes. However, finding of only rice at Hastinapur and quantity of rice being more at Atranjikhera than wheat and barley suggests that rice dominated the staple diet of the PGW people.

Bones of goat, deer, horse, bull and pig have been found at Allahapur, Hastinapur and Atranjikhera suggesting the role of animal husbandry in their economy. Spearheads and arrowheads found at sites, such as Alamgirpur and Allahapur indicate towards animal hunting. Similarly, fishing could also well have been a part of the subsistence economy. Fish-hooks were found at several PGW sites, such as Atranjikhera. Bones have also been found from Mandaula, Katha, Mukari and Loni. However, their exact cultural context cannot be derived at. Though the bones from Katha were found from the layer that had PGW potteries.

Structural Remains

The following are examples of some of the structural remains unearthed from the sites in and around the Yamuna-Hindon doab:

1. Alamgirpur: large lumps of clay, sometimes burnt, with red impressions, suggested that the houses had been built of reeds plastered over with a thick layer of clay.
2. Allahapur: closed and open-mouthed hearths, mud floors with post-holes and burnt reed-impressed mud plaster were noticed.
3. Mandoli: houses of rammed-mud floors and post-holes, suggesting that it was a village settlement, were noticed.
4. Kaseri: as structural remains, only an oval-shaped hearth was located.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DELHI
R. KARWAN
R. KALI
R. GANGA
1. Kaseri
2. Mandoli
3. Loni
4. Mandaula
5. Katha
6. Baghpat
7. Pashuram ka Khera
8. Mukari
9. Garhi-Kalanjari
10. Khurd-Banhera
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Map 7

PGW sites in the Yamuna-Hindon Doab and Its Neighbourhood

The post-holes at Mandoli and Allahapur suggests that during the PGW period the houses were made by using wooden or bamboo screens and then they were plastered with mud, as suggested by the remains of lumps clay, bearing reed or bamboo impressions from Alamgirpur, Allahapur and Hastinapur. Evidences from Hastinapur suggest that husk of rice was used to reinforce the mud or mud walls with plaster. Floors were made of rammed floor as observed at Mandoli. As the rains are expected to be heavy in the region, mud could not be relied upon for roof. The roof may have had a wattle-cum-thatch base (Roy 1983 : 137).

It is wrong to suggest that the occupation of the entire Ganga-Yamuna doab would not have been possible without iron. We have already seen that a large number of Late Harappan sites and OCP sites have been identified in the Saharanpur, Muzaffarnagar, Bulandshahr, Meerut and Ghaziabad districts. However, introduction of iron seems to have brought changes in the all round promotion of the civic life in PGW culture, which provided the base that ultimately ushered in the second urbanistion. Historically, the PGW Period is pre-Mauryan and is pre-urban in nature.

Chronology

Lal (1954-55 : 21-23) based on the data recovered from Hastinapur and the literary sources has placed PGW in a time bracket of 1100 B.C. to 800 B.C. The PGW at Bhagwanpura has been dated to 1400 B.C. to 1000 B.C. Roy (1983 : 123) after making a critical study of C-14 data argues that the sites like Hastinapur, Allahapur, Alamgirpur and Hulas, which do not give the evidence of any pre-PGW (BRW) phase, cannot be dated earlier than 7th to 6th centuries B.C. He further highlights that the C-14 dates from Hastinapur and Allahapur suggest that PGW continued up to 350 B.C. However, Makkhan Lal (1984 : 90), also after making a critical study of C-14 data places PGW between 1300 B.C. to 700 B.C. Therefore, it seems that one is not justified in assigning a uniform date to PGW.

NORTHERN BLACK POLISHED WARE CULTURE ✓

The Northern Black Polished Ware (NBPW) culture in the Yamuna-Hindon doab marks an extensive use of iron, well stratified and economically strong society, introduction of coinage and expansion of Jainism and Buddhism, emergence of states with monarchical system of government in which control of agricultural land and rights to succession played a major role.

In the Yamuna-Hindon doab the typical NBP pottery has been reported from few sites, such as Hulas, Barnawa and Baghpat. However, at other sites, such as Allahapur, although no NBP was found, but the phase was marked by the presence of some of the basic traits of the NBP assemblage, such as burnt bricks, discs, iron objects like spear-head, arrowhead, blades etc., beads, copper nail parer, awls, bone points, stone querns and pestles. Regarding Period III of Alamgirpur, T. N. Roy (1983 : 33) suggests that the find of pear-shaped vases, cooking vessels with nail headed rim, burnt bricks and unlined soak-wells correspond with Period III of Hastinapur (Late Phase of NBP). At Kaseri, late phase of NBP has been reported from period III. It was represented by plain grey ware of thicker fabric and its associated miscellany of finds (though not a single sherd of NBP was found). Similar potteries were found during explorations from Khurd Banhera, Loni, Katha, Mandaula, Siti, Mukari, Pashuram ka khera and Baghpat. Thus, all PGW sites except Garhi-Kalanjari have yielded NBPW associated potteries.

Hence, it can be said that in western Uttar Pradesh, the NBPW is preceded by PGW, except in few cases.

Settlement Pattern

An efficient village cum town economy of the preceding phase, i.e. PGW phase, gave rise to certain cities during the NBPW period. During the NBPW period the number of settlements as well as their size increased considerably. The significance of rivers as an ideal place for settlement remained but new factors, such as trade, administration and population pressure led to new settlements even away from riverbanks. The NBPW culture on some sites is represented by the structural phase of NBP while on others by defence phase. During the structural phase the NBPW occurs in good number while BRW and PGW occur in restricted number. The settlements were still rural and punch-marked coins and burnt bricks structures are absent. In the defence phase, the black-and-red, black slipped and PGW of the preceding phase almost disappears but NBP continues but its frequency is less. The phase was culturally more prosperous. This is reflected by the introduction of structures of baked bricks, ring wells, drains, and soakpits and fortifications.

Subsistence Pattern

Though, no study has been yet made on the grains cultivated during the NBPW phase in the Yamuna-Hindon doab, Makkhan Lal (1984 : 76-77) presents a good picture by taking evidences from Purana Qila, Atranjikhera and Radhan. The evidences suggest that the NBPW people cultivated:

1. Rice (*Oryza sativa*): Atranjikhera, Radhan
2. Wheat (*Triticum compactum* host): Atranjikhera, Radhan
3. Barley (*Hardeum vulgare* L.): Atranjikhera, Radhan
4. *Urad* (*Phoseolus mungo* L.): Atranjikhera
5. Pea (*Pisum arvense*): Radhan
6. Millet: Purana Qila

The evidences from Hastinapur (Lal 1954-55 : 107-120) suggest that meat of sheep, deer, horse, cattle, goat, pig and fish substituted their plant economy.

Structural Remains

At Allahapur, the use of baked bricks of different sizes (33 × 16 × 5.5 or 39 × 19.5 × 5) with rice husk as a *degraissant* was noticed. Remains of a few mud walls, a circular mud walled room containing some hearths, burnt floors, post-holes and also baked bricks were the other structural remains. This suggests that the houses were made by using wooden or bamboo screens and then they were plastered with mud. Husk of rice was used to reinforce the mud or mud walls with plaster and floors were made of rammed floor. The roof may have had a wattle-cum-thatch base. The structure seems to have followed the tradition of the preceding phase but an important aspect was that the mud bricks were now replaced by burnt bricks. At Hastinapur (Lal 1954-55), a wall of burnt brick was found to run for nearly 8 m, and three mud walls (Walls 2, 3 and 4) suggested the existence of two rooms one of which measured about 4.56 x 4.56 m. An impressive burnt brick floor was found at Atranjikhera (*IAR* 1962-63 : 34).

Some settlements were fortified with a mud or brick wall and moats were constructed encircling it. The fortification was done for embankment (for example, at Kausambi) and defence purpose (for example, at Ahichchhatra). Kautilya's *Arthasastra* also talks about the significance of fortification and how they should be built. However, it seems that the settlements along the Hindon, such as Kaseri, Alamgirpur and Allahapur are not urbanized during the NBP period and remained a small village settlement. Roy suggests that Kaseri, together with Alamgirpur and Allahapur were village settlements serving the nearby urban settlements, such as and in particular Hastinapur. He argues that these sites were away from the main trunk route and were not situated on the important rivers (such as the Yamuna) having perennial source of water. Therefore, they remain a rural settlement. (Roy 1983 : 256). If we take this view, than it goes on to suggest the role of Katha, Manduala, and Loni situated on the banks of the Yamuna, having perennial source of water, as important urban settlements i.e. administrative and trade centers. Again, being in close proximity to Delhi (Indraprastha) the inhabitants of these areas could have benefited from Delhi's position as an important administrative and trade center.

That houses as well as streets were provided with surface drains, to carry off rain water is attested from a drain of more than 7 metres found at Hastinapur (Lal 1954-55). It was sunk about a metre deep from the ground level and was provided with a brick floor and lining. It appears that houses had soakage arrangement. Several jars were placed vertically, one above the other, in a deep pit and the bottom of every jar was perforated so that water could pass down. Ring wells were also found. Deeper wells were used for carrying out water while shallower wells were used as refuse pits. At Alamgirpur, unlined soak-wells were found.

Chronology

Lal (1954-55 : 21-23) based on the data recovered from Hastinapur and the literary sources has placed NBPW in a time bracket of early 6th century B.C. to 3rd century B.C. However, Makkhan Lal, on the other hand after making a critical study of C-14 dates and comparative analysis places NBPW between 700 B.C. to 200 B.C. Historically, this is Maurya-Sunga period.

EARLY HISTORIC CULTURE ✓

The chronology of the early Historic period is 200 B.C. to 300 A.D. Historically, it is Sunga-Kushan period, represented by Red Slipped Ware, seals, epigraphs, copper plates and coins bearing names of kings.

Settlement Pattern

With the beginning of the early Historic period the population in the Yamuna-Hindon doab has increased considerably. The demographic and settlement pattern would have been also affected by the arrival of the Indo-Greeks, the Shakas, the Parthians and the Kushanas. Consequently, there was large-scale colonization of the area due to increasing population pressure on the economic and natural resources. People started making settlements even in those ecological zones that were less favourable, such as away from the river banks. As noticed in our study region, two new settlements, Baragaon and Khatta Pahladpur, seem to be established during this period. It is not feasible to enumerate the total number of settlements of the entire Yamuna-Hindon doab but the density of the colonization can be imagined by the fact that all the fifteen ancient settlements (first list) of our study region represent the Early Historical period. And, most of the villages inform about discovery of bricks that seems to be early historic bricks. In fact, even the beginning of archaeological studies in the Yamuna-Hindan doab goes back to an early Historical site, Behat, discovered by P.T. Cautley (*JASB* III 1834 : 43-44, 221-27), in 1834.

Subsistence Pattern

The subsistence economy of the preceding phases continued and was even diversified with time, with the commingling of the Indo-Greeks, the Shakas, the Parthians and the Kushanas with the local tradition. At Mathura, an inscription of Huviska (Lal, Makkhan 1984 : 86) gives a list of food items, such as barley meal (*saktu*), salt (*lavana*) and flour (*saktu-saktu*) and some green vegetables. These were the food of the poor, as the inscription informs that these items should be distributed daily among the hungry and the thirsty. An ethnographical parallel shows that even today in the rural areas of the Yamuna-Hindon doab these constitute the chief food items. For a more exhaustive list of food items, one can turn to literary evidences (Lal, Makkhan 1984 : 87). Among the cereals, we have rice, barley, wheat, fried and parched grains; types of oil included, seeds of mustard and *til*; and among pulses we have *arhar*, *moonga* and *masha*. The fat included milk, ghee and oils. Among sweets we have rough sugar (*guda*) and candy (*sarkara*). The animals and fish also formed a main part of their food economy.

Structural Remains

During this period, houses were made of mud bricks as well as burnt bricks. The use of burnt bricks had proliferated during this period. All the fifteen ancient sites (first list) have reported early Historic burnt bricks, out of which Katha and Manduala have the most impressive burnt brick structures. The archaeological and historical evidences together with the local tradition suggest that these were well-fortified regional centers. Loni also seems to fall in the same category. Several towns came up, which were well-fortified, made of burnt-bricks, had houses as well as streets provided with surface drains, however, the rural landscape of the Yamuna-Hindon doab more or less continued to be dominated by the houses made of wattle and daub and a thatched roof, though houses were also made of mud and sun-baked bricks. This rural character of India continues even in the modern times but very few *kachha* houses in the villages of the study region were noticed. These villages have been significantly affected by the material prosperity of the neighbouring cities and towns, such as Delhi, Meerut, Saharanpur, Muzaffarnagar, Bulandshahr and Ghaziabad. However, at the same time, they have not yet lost their basic rural character.

LATE HISTORICAL AND MEDIEVAL PERIODS

The political stability provided by the Guptas (320 A.D. – 550 A.D.) would have lead to an increase in population and consequently, a large-scale colonization of the Yamuna-Hindon doab. Again, the arrival of the Hunas would have affected the demographic and settlement pattern of the region. We know from the oral tradition of the Tyagis of Mandaula village that they were sent from Bihar to this region in order to defend the Gupta Empire from the attacks of the Hunas. And, later they got settled here.

Similar developments continued throughout the period of history. During the post-Gupta period and later during the medieval period, the demography and the settlement pattern of the Yamuna-Hindon kept on transforming due to two factors, first, increase in population, and second, continuous arrival of new people, such as the Gujara-Partiharas, Chauhans, Tomars and other Rajputs, later Muslims, Gujars, Jats and Sikhs also entered the region. Consequently, a large number of caste and religion based villages were settled. Though still the banks of the rivers, particularly the Hindon, were favourite for the settlements, now defence also came to play an important role, as the region was prone to attack from the invaders who desired to loot or control the Gangetic doab. People of a particular caste or religion preferred to settle closeby and around a petty fort. Within villages also there was increasing internal differentiation based on caste and religion. Presently, the situation in the doab is such that in the areas neighbouring Delhi, construction companies and agencies, both private and Government, have acquired land from the villages and are bringing in the next wave of people into the region. Since most of these people are not dependent on agriculture for their income, the proximity to water and natural resources are no longer a priority. I have referred to villages like, Jagaula, which have been totally taken over and destroyed by the Ghaziabad Development Authority to make apartments. The present settlement pattern is governed more by the factors of cheap residential colonies (as compared to Delhi), well connectivity (transport and communication) with Delhi and neighbouring towns, and less pollution.

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CONCLUSIONS

Notwithstanding the difficulties coming in way of a complete presentation of the settlement pattern of the Yamuna-Hindon doab, a broad picture as gleaned from this study is presented below.

The Area

The extremities of the study region are marked by the parallels of approximately 28° 40′ and 28° 58′ north latitude and 77°13′ and 77° 28′ east longitude. However, the exploration was extended to cover the Pashuram ka khera and Surana. The total area explored, measures approximately about 600 sq. km. In the study region, total 15 ancient sites related to protohistoric and early historic cultures were explored, these include few already identified and excavated sites. In addition, 20 medieval settlements and sites have been identified some of which may contain remains of the ancient past.

The Ecological Setting

The relief of the Yamuna-Hindon doab exhibits *Bangar* land rising upto 15-60 metres above the adjoining floodplains, the *Khadar*. This relief would have enabled settlers to make dwelling settlements on the higher land zones, while the adjoining floodplains, rich in alluvium, is ideal for any economy based on agricultural activity. Most of the settlements are situated on the top of the high banks of the Yamuna and the Hindon. Though on the banks of the Hindon, land zones of even average height were also selected for settlements, as its floods were less threatening than the floods of the Yamuna. Two settlements, Baragaon and Khatta Pahladpur, are away from the river-banks but these have been settled only towards the early centuries of Christian era, when increasing population pressure forced people to settle in the ecologically less favourable zones.

In summers, the melting of the snow and heavy rainfall causes considerable rise in the river; the stream is then very deep and strong, and in time of heavy flood the rivers approach close to the outskirts of the settlements. But they do little damages because the rivers are fairly regular in habits. On the other hand, the small areas of lowland on its banks are actually benefited by the alluvial deposits brought down by the rivers. The *Gazetteer of Meerut* (1922) reports that the land inundated by the rivers is occasionally cultivated for the *rabi* crops, and the harvests are of excellent quality.

The climate is sub-humid, the annual rainfall is between 80-100 cm and the plains are rich in alluvium. Consequently, the region is ideal for cultivation. Such soil types and the fertility of the soil are important factors determining the location of human settlements, especially in the case of agricultural communities. The empires and the invaders of the past were aware of the fertile land of the doab and its prosperity, and hence this area witnessed frequent attempts by these forces to control the doab.

The presence of the varied species in the region and the fact that in the past the area had a much richer vegetation shows that the region, the Yamuna-Hindon doab, was easy attraction for human settlements. The rich vegetation together with rich agriculture (facilitated by the fertile alluvium soil and the perennial sources of water, the Yamuna and the Hindon) would have easily met the food requirements of the people. In fact, the vegetation of the area could provide at least the bare minimum subsistence to the people even when there were natural disasters, such as famines.

Also, as the *Gazetteer of Meerut* (1922) highlights, the comparative vicinity of the mountains and the high altitude combine to render the region one of the healthiest parts of the plains of India.

Proximity to Water : The Riverine Setting

Riverine setting plays an important role in the choice of the settlements. As Possehl has aptly said (1980 : 85), an obvious advantage to a riverine location is, reliable supply of water for human and animal consumption as well as for general domestic use. Further, it also afforded a potential for irrigation. Out of 15 ancient sites, five sites, such as Baghpat, Katha, Mandaula, Loni and Mandoli are located along the Yamuna; eight are located along the Hindon, these include Kaseri, Khurd Banhera, Siti, Hateva, Garhi-Kalanjari, Mukari (both Mukari Village and Mukari Pir site), Valmiki Ashram and Pashuram ka khera; and two, Baragaon and Khatta Pahladpur, are located away from both the rivers, towards the centre of the doab. Out of 20 medieval sites, 11 are located along the Hindon. Eight settlements are more towards the middle of the study region. But among these 8 settlements also, for 4 settlements, the Hindon is the closest river. And, for the other 4 settlements, the Yamuna is the closest river. Only 1 site, Gokulpur, is along the Yamuna. But the settlements in the middle of the study region were dependent more on the Hindon (for example, a canal was built on the Hindon to bring water to the Ranap village). This dependency of the settlements on the Hindon was due to the fact that being a small stream, it was easier to make canals on the Hindon. Further, its floods were less threatening than those of the Yamuna.

There are also other significant sources of water that play a crucial role in the agricultural economy of the region and thereby influence the settlement pattern viz. wells (as the water table of the region is very high) and the annual rainfall between 80-100 cm. The two major sources of irrigation are canals and wells (*Gazetteer of Meerut,* 1922). Panini mentions that villages depended for their water supply on wells (*kupas*) to which were attached water trough (*nipanas*) from which the cattle would drink (Agrawal 1953 : 141). Also, the famous legend of *Lakkhi banjarra* (a nomad) shows that it was easy to dig up well as the water level was very high.

The Settlements, Their Cultural Associations and Size

In the study region, total 15 sites related to protohistoric and early historic cultures were explored, these include few already identified and excavated sites.

1. **Kaseri** (28° 41′ N latitude, 77° 24′ E longitude) : The cultural materials recovered from the site reveal six cultural periods viz. Ochre Colour Ware (OCP), PGW (and its associated ceramics like the black-and-red ware, black slipped ware and plain red wares), NBPW associated plain grey ware of thicker fabric and its associated miscellany of finds, early Historic, Gupta and the post-Gupta and medieval periods. The present height of the mound is about 15-20 metres, while the length is about 200 metres. The breadth is about 100 metres. Area is 2 ha.

   Thus, at Kaseri a continuity of culture from OCP period to medieval period is noticed.

2. **Mandoli** (28° 42′ 10″ N latitude, 77° 18′ 30″ E longitude): The cultural materials recovered from the site reveal five cultural periods viz. Late Harappan, followed by a break in habitational occupation, PGW, an archaeological level distinguished by a black slipped ware, Sunga-Kushana and Gupta period. The local tradition of Rajputs suggests that it was in occupation during the

Table I

Dimensions of the Ancient Sites of the Field Area

S.No.	*Site Name*	*Length (metres)*	*Breadth (metres)*	*Height (Metres)*	*Area (Ha.)*
1.	Kaseri	200	100	15-20	2
2.	Mandoli	25	15	2-3	0.0375
3.	Khurd Banhera	22	30	8-10	0.066
4.	Siti	75	90	3-5	0-9
5.	Loni	250	100	15-20	2.5
6.	Hateva	26	15	3-4	0.039
7.	Garhi-Kalanjari	30	20	6	0.06
8.	Mukari				
	(i) Mukari Village	200	100	17	2
	(ii) Mukari *Pir*	40	20	17	0.08
9.	Valmiki Ashram	50	50	5	0.25
10.	Pashuram Ka Khera	200	100	5-7	2
11.	Baghpat	500	500	17	25
12.	Katha	200	100	16-18	2
13.	Mandaula	300	400	18	12
14.	Baragaon	—	—	—	—
15.	Khatta Pahladpur	60	50	3-4	0.3

Rajput and medieval period also. At present, the height of the mound is about 2-3 metres and length is about 25 metres. The breadth is about 15 metres. Area is .0375 ha.

Thus, at Mandoli, the only break in the habitational occupation occurs between the Late Harappan and the PGW period. Otherwise, there is a habitational continuity till the medieval period.

3. **Khurd Banhera** (28° 44′ N latitude, 77° 23′ E longitude): The cultural materials recovered from the site reveal four cultural periods viz. PGW, NBPW, early Historic, Gupta-post-Gupta and medieval period. At present, the height of the mound is about 8-10 metres and length is about 22 metres. The breadth is about 30 metres. Area is .066 ha.

   Thus, at Khurd Banhera a continuity of culture from the PGW period to the medieval period is noticed.

4. **Siti** (28°45’ N latitude, 77° 22′ E longitude): The cultural materials recovered from the site reveal six cultural periods viz. Late Harappan, NBPW, early Historic, Gupta-post-Gupta and medieval period. At present, the height of the mound is about 3-5 metres and the length is about 75 metres. The breadth is about 90 metres. Area is .9 ha.

Thus, the material remains picked up from Siti show a break in occupation during the PGW period. However, a substantial portion of the mound still remains buried. Nevertheless, after the Late Harappan phase, from the NBPW period onwards a continuity of culture till the medieval period was noticed.

5. **Loni** (28° 45′ N latitude, 77°17′ 30″ E longitude): The cultural materials recovered from the site reveal five cultural periods viz. PGW, NBPW, early Historic, Gupta-post-Gupta and medieval period. The present height of the mound is 15 to 20 metres. The length of the mound is about 250 metres. The breadth is about 100 metres. Area is 2.5 ha.

   Thus, at Loni a continuity of culture from the PGW period to the medieval period is noticed.

6. **Hateva** (28° 45′ 30″ N latitude, 77° 22′ E longitude): The cultural materials recovered from the site reveal three cultural periods viz., early Historic, Gupta-post-Gupta and medieval period. The length of the Hateva mound is about 26 metres, breadth is about 15 metres and the height is about 3-4 metres from the adjacent ground level. Area is .039 ha.

   Thus, at Hateva a continuity of culture from the Early Historic period to the medieval period is noticed.

7. **Garhi-Kalanjari** (28° 46′ 10″ N latitude, 77° 22′ 10″ E longitude): The cultural materials recovered from the site reveal four cultural periods viz. PGW, early Historic, Gupta-post-Gupta and medieval period. The height of the Kalanjari mound is about 35 metres from the side facing the Hindon and from the centre the mound is about 6 metres high. The length of the mound is about 30 metres. The breadth is about 20 metres. Area is .06 ha.

   At Garhi - Kalanjari as per the present evidences there seems to be a break between the PGW and NBPW period. Otherwise, after PGW, there is a continuity of culture from the early historic to medieval period.

8. **Mukari** (28° 54′ N latitude, 77° 25′ E longitude): The cultural materials recovered from both sites, Mukari Pir and Mukari village, together reveal five cultural periods viz. PGW, NBPW, early Historic, Gupta-post-Gupta and medieval.

   Mukari Village mound: The cultural remains recovered from the Mukari village mound include, NBP associated plain grey ware of thicker fabric, early historic potteries, Gupta, post-Gupta potteries and medieval potteries. The length of the mound is about 200 metres, the breadth is about 100 metres and the height is about 17 metres. Area is 2 ha.

   Mukari *Pir* mound: The cultural remains recovered from the Mukari *Pir* mound include, Painted Grey Ware associated plain grey ware of fine fabric, and early historic potteries. However, over the mound the occurrences of PGW overshadow those of other pottery types. The length of the Mukari *Pir* mound is about 40 metres, the breadth is about 20 metres and the height is about 17 metres. Area is .08 ha.

   Thus, at Mukari a continuity of culture from the PGW period to the medieval period is noticed.

9. **Valmiki Ashram** (28° 57′ N latitude, 77° 28′ E longitude): The cultural materials recovered from the site reveal three cultural periods viz., early Historic, Gupta-post-Gupta and medieval period. The height of the mound is about 5 metres, its breadth is about 50 metres and its length is also about 50 metres. Area is .25 ha.

   Thus, at Valmiki Ashram a continuity of culture from the early Historic period to the medieval period is noticed. Though it is a probability that the site could be actually more ancient, as it is directly associated with the *Ramayana*. The *mahant* has reported that he had found five punched silver coins but had lost them. These coins seem to be Mauryan coins. However, in the absence of evidences nothing could be said with certainty. Nevertheless, it appears to be an important socio-religious and cultural centre.

10. **Pashuram ka khera** (29° N latitude, 77° 26′ E longitude): From the surface of the mound, besides PGW, early Historical, Gupta-post-Gupta, and medieval potteries were found. The length of the mound is about 200 metres and the breadth is about 100 metres. The height of the mound is about 5-7 metres. Area is 2 ha.

    Thus, at Pashuram ka khera a continuity of culture from the PGW period to the medieval period is noticed. This site also appears to be an important socio-religious and cultural centre.

11. **Baghpat** (28° 57′ N latitude, 77°13′ E longitude): Cultural remains belonging to PGW, Black slipped ware, NBP associated thick grey ware, early Historic, Gupta, post-Gupta and medieval potteries were found. The length of the mound is about 500 metres, the breadth is 500 metres, and the height is about 17 metres. Area is 25 ha.

    Thus, at Baghpat a continuity of culture from the PGW period to the medieval period is noticed.

12. **Katha** (28° 54′ N latitude, 77°15′ E longitude): I noticed cultural remains belonging to PGW, NBP associated thick grey ware, early Historic, Gupta, post-Gupta and medieval potteries. Length of the mound is about 200 metres, breadth is 100 metres and the height is about 16-18 metres. Area is 2 ha.

    Thus, at Katha a continuity of culture from the PGW period to the medieval period is noticed.

13. **Mandaula** (28° 49′ N latitude, 77° 16′ E longitude): Cultural remains, such as PGW, NBP associated thick grey ware and burnt bricks, early Historic, Gupta, post-Gupta and medieval potteries were noticed. The length is about 300 metres, breadth is about 400 metres and the height is about 18 metres. Area is 12 ha.

    Thus, at Mandaula a continuity of culture from the PGW period to the medieval period is noticed.

14. **Baragaon** (28° 52′ 40″ N latitude, 77° 21′ E longitude): This site seems to possess cultural remains at least from post-NBPW phase onwards. The entire mound has been converted into agricultural land therefore, the dimensions and area of the mound could not be measured.

15. **Khatta Pahladpur/Prahladpur** (28° 54′ N latitude, 77° 22′ E longitude): This site seems to possess cultural remains from the early Historic period onwards. The length of the mound is about 60 metres, breadth is about 50 metres and the height is about 3-4 metres. Area is .3 ha.

The Distribution and the Settlement Pattern of the Sites

The ecological zones and other factors like trade, political organization, warfare, religion and subsistence technology have affected the settlement pattern, distribution and their size in different ways (Trigger 1968). Here we would concentrate on an analysis of 15 sites that contain cultural remains from the ancient period onwards.

Out of 15 sites, five sites are located along the Yamuna; eight are located along the Hindon and two are located away from both the rivers. Thus, it appears that the main concentration of the settlements is found along the river Hindon. And, almost all the settlements possess multicultural archaeological sites, showing a continuity of the importance of the riverine and ecological settings in determining the settlement pattern. The extent and the thickness of the habitational deposit vary from site to site. The extent and occupational thickness of the sites along the Yamuna are greater than those of the sites along the Hindon. Most of the sites are in the village proper or in its immediate

Table 2

Number of Ancient Settlements in the Field Area in Respect of Size and Location

Proximity to River	*Total No. of Settlements (15)*	*Size (in Hectare)*		*Total*
Yamuna	5	Less than	1 ha	1
		Between	1-2 ha	1
		Greater than	2 ha	3
Hindon	8	Less than	1 ha	5
		Between	1-2 ha	3
		Greater than	2 ha	0
Middle of the Doab	1 (Actually, 2 but the mound at Baragaon has been totally converted into agricultural field)	Less than	1 ha	1

vicinity. For example, except Baghpat, all other five sites along the Yamuna are in the village proper or to put it more clearly the new villages are settled on ancient mounds. But along the Hindon, only Khurd Banhera and Mukari are in the village. Again, maximum sites have a religious connotation attached to it in the form of *Pir's Mazaar* or a village shrine, while Valmiki Ashram is basically a temple and the neighbouring areas are a part of the temple complex. Moreover, Pashuram ka khera, as the name suggests, is basically a mound (*khera*), however, a new but small temple has come up. Few sites, such as Kaseri, Siti, Hateva, Garhi Kalanjari, Mukari, Pashuram ka khera and Baghpat are surrounded by agricultural fields and are being cut to extend the fields. This analysis shows that along the Yamuna most of the sites, except Baghpat, have human settlements till date (2.5 km south of Baghpat mound however, there is the old Baghpat village whose antiquity can be traced at least to the medieval period). On the other hand, most of the ancient sites along the Hindon are being converted into agricultural fields. This process has been continuing since very long, implying that we have probably lost quite a significant number of sites along the Hindon. This seems to be true as the people of the area inform about certain mounds (*khera*), such as Khera Viraan, Kumhera, Manglapur, Chakbandi-Sultanpur and Kabulpur, which once existed but now has been converted into agricultural fields. Interesting to note is that all these mounds were along the river Hindon. To this list if we add the medieval sites, then it significantly increases the number of settlements along the Hindon. Thus, it is clear from the distribution of the settlements that maximum sites are located along the banks of the Hindon River, but they are relatively small.

However, the size of the sites along the Yamuna is much larger than that of the sites along the Hindon. This suggests that the settlements along the Yamuna, such as Loni, Mandaula and Katha, which were once forts, were important regional centers performing administrative and trade related activities. In fact, Loni was a centre of a salt-tract in the past. Moreover, the occupational deposits on these sites are very thick, suggesting that they were occupied for a longer period and there was continuity in occupation. Moreover, these sites are culturally more prosperous. On the other hand, most of the sites along the Hindon were village settlements and seems to be serving the nearby regional centres. O.H.K. Spate and A.T.A. Learmonms (1963) also state that in the past defence played an important part in defining the settlement pattern of a village, especially in the areas open to constant disturbance, such as the Sutlej-Yamuna and the Yamuna-Ganga doabs. Villages are generally grouped around a petty fort. Moreover, the sites along the Hindon were away from the main trunk route and the Hindon was not as suitable for long distance navigation as the Yamuna was. Therefore, these sites remain a rural settlement.

Along the Yamuna, the distance between Loni and Mandaula is 8 km, between Mandaula and Katha is 8 km and between Katha and Baghpat is 6 km. However, along the Hindon, the distance between Banhera and Siti is 2 km, between Siti and Hateva is 1.5 km, between Hateva and Garhi Kalanjari is 2 km, between Garhi Kalanjari and Mukari is 13 km. However, if we include the sites given in the second list of 20 sites, then the gap between Garhi Kalanjari and Mukari is filled by sites, such as Singauli, Gauna, Shahbanpur, Laliyana, Chamrawal and Haresia. And, the average spacing between all these villages is 1.5–2 km. Thus, the sites along the Hindon are more closely spaced than the sites along the Yamuna. This could be due to number of factors:

1. According to Bruce Trigger (1968), a number of factors affect the settlement pattern. He opines that, "the overall density and distribution of population of a region is determined to a large degree by the nature and availability of the natural resources that are being exploited. As long as areas with the soil, their economic resources and favourable climate are available, settlers tend to avoid areas that are naturally poor or where disease or other dangers are common." We know that the economic resources and climate of the Yamuna-Hindon is more or less same. Further, it is not that the banks of the Yamuna were affected by a disease that was not present in the area along the Hindon. Therefore, the third factor left is that of "other dangers". This seems to be quite a possibility because the settlements along the Yamuna were more prone to direct attacks by the invaders from the west. Perhaps, precisely this was the reason that settlements such as, Loni, Katha and Mandaula were made as forts that would safeguard the settlements along the Hindon that were more closely spaced.
2. Further, a group of village settlements along the Hindon were needed to support the regional centres of trade and administration along the Yamuna.
3. Also, the floods in the Yamuna are more threatening to settlements than the floods in the Hindon. Therefore, while only high banks of the Yamuna were selected for settlements, along the Hindon, banks with even average heights were selected. This is reason that why we have lost most of the site along the Hindon, as it was easier to convert the low mounds into agricultural lands.

None of these factors worked in isolation, they together seem to create the ecological, socio-economical and political base determining the settlement pattern in the region.

At macro level, it appears that the Late Harappan settlements in the Yamuna-Hindon doab were established by way of migration from the adjoining Haryana and Punjab regions where the Harappan settlements had been established from a much earlier period (Dikshit 1985 : 58). The Harappan culture complex at Alamgirpur and Baragaon were found more influenced by the material remains of Sutlej Valley, whereas Hulas appears to have its mooring in the Sraswati-Drishadvati complex of Haryana (Dikshit 1985 : 57). Thus, in the Yamuna-Hindon doab both these cultural waves are present and it appears that in the doab only late mature phase entered and survived.

In the Yamuna-Hindon doab, the migration took place along the river system. The settlements in the Yamuna-Hindon doab are generally located on the higher banks of the rivers and are small in size. The settlements depended upon the nature of soil and easy availability of water for irrigation and domestic use, and rich vegetation.

The economic and ecological factors also affected the size and spacing of the settlements. The average size of an inhabited area is about 200 metres in length and 150 metres in breadth. The average spacing between two settlements is from 8 to 12 km. Though in the Saharanpur district it is between 5 to 8 km.

The duration of these settlements must be short as evident from the limited thickness (between 1-2 m) of occupational deposit. The average size of the settlements (200 metres in length and 150 metres in breadth) shows that the inhabitations belonged to small cluster of families. One can notice both the linear and circular pattern of settlement. In the Yamuna-Hindon doab in the absence of large settlements, the cultural complex cannot be viewed from the point of urban network. The OCP settlements are also more or less on the pattern of the Late Harappans. The Late Harappan and OCP people practised agriculture and cultivated rice, wheat, barley and gram, together with domestication of animals, such as *Canis familiaris Linn, Bos indicus Linn, Bubalus bulalis Linn, Capra hircus aegagrus Erxl, Ovis vignei Blyth, Sus cristatus Wagner*. The structural remains and the material culture show a degenerating state of economy and the houses were made of wattle and daub.

The settlements of the PGW culture are generally located on rivers banks. The average distance between two sites is about 10-12 km and in favourable ecological zones it is even 5 km. The settlements along the Hindon are more closely spaced as compared to the settlements along the Yamuna. However, the settlements along the Yamuna are bigger in size than those along the Hindon and other tributaries of the Yamuna. The habitations are basically small villages with average size of 1 to 4 hectare. Iron was introduced during the PGW period but copper remained the chief metal. PGW people cultivated wheat, rice, barley, gram, *urad* and pea and practised animal husbandry, hunting and fishing. A village cum town economy seems to exist during this period.

The PGW culture in western Uttar Pradesh, is younger than PGW culture of Haryana, Punjab and Jammu. Thus, there seems to be an eastward movement of PGW people from neighbouring areas of Haryana, Punjab and probably Jammu into the Yamuna-Hindon doab.

The houses were made by using wooden or bamboo screens and then they were plastered with mud, husk of rice was used to reinforce the mud or mud walls with plaster. Floors were made of rammed floor. The roof may have had a wattle-cum-thatch base.

During the NBPW period, a considerable increase in population resulted in increase in number of settlements as well as their size. The significance of rivers as an ideal place for settlement remained but new factors, such as trade, administration and population pressure led to new settlements even away from river-banks. The period was marked by an extensive use of iron, well stratified and economically strong society, introduction of coinage and emergence of monarchical states. An efficient village cum town economy of the preceding phase, i.e. PGW phase, gave rise to certain cities during the NBPW period.

People cultivated, rice, wheat, barley, *urad*, pea and millet. Meat of sheep, deer, horse, cattle, goat, pig and fish substituted their plant economy.

The previous pattern of houses continued but an important aspect was usage of burnt bricks. Some settlements were fortified with a mud or brick wall and moats were constructed encircling them. However, it seems that while the settlements along the Yamuna, such as Katha, Mandaula and Loni were urbanized, becoming an important administrative and trade centers, those along the Hindon, such as Kaseri, Alamgirpur and Allahapur remained a small village settlement that served the regional centres of trade and administration.

With the beginning of the Early Historic period, there was an increase in colonization of the area due to increasing population pressure on the economic and natural resources. The size of the settlements also increased. Many settlements now came up in the areas away from the banks of the rivers. The houses were made of mud as well as sun dried and burnt bricks. The subsistence economy of the preceding phases was diversified with time.

Throughout the Late Historical and Medieval period the twin factors of increase in population and influx of people into the Yamuna-Hindon doab resulted in a large-scale colonization of the doab. A large number of caste and religion based villages were settled. Though still the banks of the rivers, particularly the smaller streams were favourite for the settlements, now defence also came to play an important role. The population pressure forced people to compromise on the natural and ecological advantages and to settle on areas away from the banks of the rivers. However, since the economy of the region still depended on agriculture people of these areas took to canal and well irrigation and became more dependent on rains.

The present work underlines that most of the identified sites were village settlements mainly dependent on agriculture, and some of them probably served the neighbouring urban settlements, such as Hastinapur. In the past, the ecological conditions played a particularly significant role during the earliest phases of the human history when people had a comparatively limited repertoire of resources and skills with which to control, manipulate, and exploit their surroundings. However, as necessity is the mother of all inventions, with time, factors, such as increase in population pressure necessitated developments of resources and skills. Consequently, the settlers learnt to control and exploit even the ecologically less favourable surroundings, as compared to the surroundings along the banks of the rivers, and one witnesses proliferation of human settlements not only along the banks of the rivers but also in the areas that are away from the rivers. The number of settlements and their sizes kept on increasing from the Late Harappan period itself, through the BRW, PGW and NBPW period up to the historical and medieval times. This necessitated developments in the socio-political and economic structure too. Among themselves, the settlers worked out the relationship of core and periphery, though the essential of basic self-sufficiency in rural areas remained, yet there was never a closed society. In nutshell, the settlement pattern of the Yamuna-Hindon doab was governed by two main factors, the nature and the necessity. This pattern of human settlement continues right from the earliest times.

APPENDIX

LIST OF EXPLORED AND EXCAVATED SITES IN WESTERN UTTAR PRADESH

LH = Late Harappan; OC = Ochre-coloured Ware, PG = Painted Grey Ware; BR = Black-and-Red Ware; GW = Grey Ware; G = Grey Ware associated with the NBPW, NBP = material associated with the Northern Black Polished Ware, BS = Black-Slipped Ware, EH = Early Historical, SK = Sunga-Kushana Ware; KG = Kushana-Gupta Ware, and M = Medieval Potteries

S.No.	*District*	*Village/Site*	*Cultural Assemblage*[1]
	Bulandshahr		
1.	”	Acheja	PG, GW
2.	”	Ahar	G, SK, M
3.	”	Ahmadgarh	BR, PG, G, BS, SK
4.	”	Akrabas	OC, SK, M
5.	”	Amanullahpur (*alias* Maharana)	NBP
6.	”	Asawar	PG, GW
7.	”	Aurangabad	EH, M
8.	”	Barauli	PG
9.	”	Bargaon	SK
10.	”	Barner Sharif	PG, BR, BS, SK, M
11.	”	Bhogpur	PG
12.	”	Birpur	PG, GW
13.	”	Budhena	SK
14.	”	Eastern standing stumps of the Balai Kot or upper fort-mound underlying the Khurja bus-stand	PG, GW, SK, M
15.	”	Bhangel-Begumpur	EH, M

(Contd....)

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[1] An attempt has been made to provide information as published in various journals, books, and Indian Archaeology—A Review. Therefore, if a side has been reported as representing early Historic or Sunga or Kushan Period then the same is reported here.

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Bulandshahr		
16.	"	Bhataola	EH
17.	"	Bhatpura	LH, OC
18.	"	Bhogpur	EH, M
19.	"	Birupur	PG, GW
20.	"	Biswana	EH
21.	"	Chandpur	SK, M
22.	"	Chipiyana	EH, M
23.	"	Dadha	GW
24.	"	Dadri	Historical
25.	"	Darau	PG, GW with reddish exterior, NBP, SK
26.	"	Dasehra	SK
27.	"	Daulatpur	M
28.	"	Deevlakhara	OC, M
29.	"	Dhaurau	PG, BR, SK, M
30.	"	Ghalibpur	PG, GW
31.	"	Ghatamwala	GW
32.	"	Ghazipur	EH
33.	"	Ghori-Bachchera	EH, M
34.	"	Gujarpur	EH, M
35.	"	Gulistanpur	LH, PG, GW
36.	"	Hasangarh	SK
37.	"	Ismailpur	SK
38.	"	Jafarpur (*alias* Gurdipur)	SK
39.	"	Janpat	EH, M
40.	"	Jehra	PG, GW

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Bulandshahr		
41.	”	Katauri	PG, GW
42.	”	Kot	GW
43.	”	Kot-Khera	PG, BS, SK, M
44.	”	Lal Qila	OC
45.	”	Manpur	LH, OC
46.	”	Nagla-ki-Rani	EH, M
47.	”	Nizampur	EH
48.	”	Pindrawal	G, SK , M
49.	”	Qawan	SK
50.	”	Raipur	PG, GW
51.	”	Rasheedpur	M
52.	”	Ronda	SK
53.	”	Ruhullahpur	EH, M
54.	”	Salempur	PG
55.	”	Salimgarh	M
56.	”	Shakoorganj	BR, PG, G, BS, SK
57.	”	Sonda-Jatpur	SK
58.	”	Tajpur-Piaoli	PG
59.	”	Til-Begumpur	EH
60.	”	Usmanpur	GW
61.	”	Utsara	PG, GW
62.	”	Yeseenpur	PG, G, BS, SK
	Dehra Dun		
63.	”	Bahadurgarh	M
64.	”	Bamangaon	Medieval Temples
65.	”	Bharat mandir	Crude NBP, GW, SK, 8th and 12th century

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Dehra Dun		
66.	"	Bulaquiwala	SK, GW, Kunind copper coins, red ware
67.	"	Dhakrani (Colony)	M, Late Medieval Temple
68.	"	Jagaratram	Post-Kushan and pre-Gupta king, i.e. 250 A.D. to 300 A.D
69.	"	Jiwangarh	M
70.	"	Kattapathar	Medieval temple and sculptures
71.	"	Khera	M, Late Medieval Temple
72.	"	Langha	M, Late Medieval Temple
73.	"	Luhun	Medieval sculptures
74.	"	Majri	SK, GW, terracotta, red ware
75.	"	Maya-Kund	SK, M
76.	"	Prithipur Jungle	M, Late Medieval Temple
77.	"	Rajwada	Medieval sculptures
78.	"	Shyampur Garhi, 3 km west of Virbhadra	EH
79.	"	Virbhadra	SK, KG, Gupta, post-Gupta
80.	"	A site in the township of Antibiotic Factory at Rishikesh near the confluence of the rivers Rambha & Ganga	Kushana monastery
81.	"	An ancient mound near Kalsi famous for the rock-edict of Asoka	GW, M
82.	"	On a terrace of the Yamuna, near Kalsi	Rolled Early Stone Age tools, such as handaxe, chopper
	Meerut (including the present district of **Ghaziabad**)		
83.	"	Aad	M
84.	"	Abdullahpur	Medieval Temples

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Meerut (including the present district of **Ghaziabad**)		
85.	"	Aghanpur	M
86.	"	Akbarpur Rasana	Medieval Temples
87.	"	Akbarpurgarhi	SK, M
88.	"	Akbarpurgarhi	M
89.	"	Alamgirpur	LH, PG, BS, BR, Plain Red Ware, EH, M (Glazed Ware)
90.	"	Alipur Jijmana	EH
91.	"	Allahapur	BR, PG, BS, traits of NBP assemblage, EH
92.	"	Atrara	PG, SK
93.	"	Aurangabad	Medieval Temples
94.	"	Badla Kaithwada	OC, Medieval Temples and Sculptures
95.	"	Baghpat	PGW, NBP
96.	"	Baleni	PG
97.	"	Bamnauli	PG
98.	"	Barkali	Historical
99.	"	Barnawa	PG, NBP
100.	"	Behroli	M
101.	"	Bisrakh	PG
102.	"	Chandauri	EH
103.	"	Chobia	Medieval Temples
104.	"	Dabaka	EH
105.	"	Dabathua	PG
106.	"	Dabka	PG, BR, G, M
107.	"	Dadri	Historical

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Meerut (including the present district of **Ghaziabad**)		
108.	”	Dastoi	M
109.	”	Daurala	EH
110.	”	Dayampur	M
111.	”	Dhanawali	PG
112.	”	Dhauzri	Medieval Temples
113.	”	Dungar	LH, OC
114.	”	Durganpur	PG, BS, NBP
115.	”	Eklakhnagar	EH
116.	”	Fakarpur Kauatta	M
117.	”	Fatehpur Gagaoz	Medieval Temples
118.	”	Fathpurnarain	M
119.	”	Ferozpur	SK, M
120.	”	Ferozpur	M
121.	”	Gangheri	M
122.	”	Gazupura	M
123.	”	Ghosipur	EH
124.	”	Godha	G, SK
125.	”	Gyanpur	Mosque
126.	”	Hajipur	OC
127.	”	Harsinghpur	22 Kushan and Indo-Sassanian gold coins
128.	”	Hazipur	PG
129.	”	Humayunpur	SK, M
130.	”	Huzurnagar	PG, NBP
131.	”	Idrishpur	SK

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Meerut (including the present district of **Ghaziabad**)		
132.	"	Inchi-Kalan	M
133.	"	Inchi-Khurd	M
134.	"	Incholi	Mosques
135.	"	Jalalpur	GW, EH
136.	"	Jarauthi	PG
137.	"	Jaula	PG, NBP, Kushana
138.	"	Jhal	PG
139.	"	Kaila Kunehra (Ghaziabad)	PG
140.	"	Kaili	M
141.	"	Kakraut	SK, M
142.	"	Kalina	PG
143.	"	Kansi	OC, PG
144.	"	Kaser Khera	Mosque
145.	"	Kaseri	OC, PG, BR, BS, Plain Red Ware associated with PG, G, SK, KG, M
146.	"	Kastia Shamshernagar	Medieval Temples
147.	"	Kayastgaondi Khoel	M
148.	"	Kazimpur (Ghaziabad)	OC
149.	"	Khai-Khera	SK, M
150.	"	Khanpur	KG
151.	"	Khar Khoda	OC
152.	"	Kharkhauda	Medieval Tank & Mosque
153.	"	Khatki	M
154.	"	Khera	PG, BS

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Meerut (including the present district of **Ghaziabad**)		
155.	”	Khindwari	PG
156.	”	Kiratpur	M
157.	”	Kunda	Historical
158.	”	Kuri	PG
159.	”	Kuri-Kamalpur	SK, M
160.	”	Ladpur	Medieval Tank
161.	”	Laliana	M
162.	”	Loni	PG, G, BS, EH, M
163.	”	Mahmudpur-Sikera (Burz)	SK, M
164.	”	Malehra	Terracotta Cakes, OC
165.	”	Mandoli	LH, PG, BS, SK, Gupta
166.	”	Mataur	EH
167.	”	Maur-Khurd (Kheri)	SK, M
168.	”	Medpur	EH, Terracotta beads, and silver coins of Iltutmish
169.	”	Meerut	Mosques
170.	”	Mohammadpur	Medieval Temples
171.	”	Mopalpur	PG
172.	”	Muhammadpur-Dhumi	PG
173.	”	Muzaffarnagar Saini	PG, BS
174.	”	Nagla Firoz Mohanpur (Ghaziabad)	PG
175.	”	Nagla Hareru	PG
176.	”	Nagla Mal	EH, Medieval Temple and Tank
177.	”	Nahli	OC

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Meerut (including the present district of **Ghaziabad**)		
178.	"	Narangpur	M
179.	"	Naval Khera	SK, M
180.	"	Nawalpur	M
181.	"	Nethla	PG
182.	"	Nizampur	GW
183.	"	Nohari	Historical
184.	"	Paiendapur	M
185.	"	Panchgaon Patti Gopal	EH
186.	"	Parichhatgarh	PG, G, SK, M
187.	"	Patholi	Medieval Temples
188.	"	Phalauda	Historical Mound, and Medieval Sculptures of Vishnu and Mahishasurmardini
189.	"	Phaphunda	Medieval Temple, Tank, and Mosque
190.	"	Pura	PG
191.	"	Pura Baliana	PG, NBP, Kushana, M
192.	"	Rali	GW, EH
193.	"	Rasulpur	Medieval Temples
194.	"	Rasulpur Zahid	OC
195.	"	Saifpur	M
196.	"	Salempur	Mosque
197.	"	Sarawa	PG, BS, SK, M
198.	"	Sheonagri	PG
199.	"	Shikarpur	OC

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Meerut (including the present district of **Ghaziabad**)		
200.	"	Shondat	G, SK, M
201.	"	Singauli Taga	LH
202.	"	Sultanpur Hitana	PG
203.	"	Suthari (Ghaziabad)	PG
204.	"	Tajpur	SK, M
205.	"	Tanda	PG
206.	"	Toda	OC, PG, Kushana
207.	"	Uldaypur	EH (SK)
208.	"	Ulughpur	EH
	Muzaffarnagar		
209.	"	Baheri (Disal-Pur-Khera)	Coarse G, SK, M, terracotta objects like ear-ring, fragmentary animal figurines, fragmentary plaque with a foot-impression, dabber-handle
210.	"	Bhanti Khera I	LH
211.	"	Bhanti Khera II	LH
212.	"	Bhopa	M
213.	"	Bhopur	SK, M
214.	"	Bhuma	G, BS, M
215.	"	Bhura	LH, PG, SK
216.	"	Chandan	M, terracotta beads etc.
217.	"	Chhachrauli	M
218.	"	Doheti	M
219.	"	Firozpur	M
220.	"	Hatchhoya I	LH

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Muzaffarnagar		
221.	”	Hatchhoya II, locally known as Sujangarhi	LH
222.	”	Jamalpur	M
223.	”	Jandheri	LH
224.	”	Jarwar	M
225.	”	Jasala	LH
226.	”	Jatwara	G, SK, M
227.	”	Jhinjhana 11 km. from Shamli	OC, PG
228.	”	Kailapur	LH, PG, BS, G, SK, M
229.	”	Kairana	PG
230.	”	Kaithora	PG, G, BS, SK, M
231.	”	Kambhera	M
232.	”	Kari	M
233.	”	Khai-Khera	G, SK, M
234.	”	Kheri-Sarai	G, BS, SK, M
235.	”	Majhera	M
236.	”	Mukallampur	SK, M
237.	”	Niyamu 13 km north-west from Muzaffarnagar, on the bank of river Hindan	PG, G, NBP, SK, KG, M
238.	”	Nurnagar	PG, GW, NBP, SK, M
239.	”	Puthi-Ibrahimpur	M
240.	”	Rahatpur	LH
241.	”	Rai	GW, BS, SK, a thick grey ware with graffiti in Brahmi script, M
242.	”	Rampur	PG, GW, M

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Muzaffarnagar		
243.	”	Samalkha, locally known as Kankar Tila	LH
244.	”	Shukartar	SK, M
245.	”	Shukartar Bangar	M
246.	”	Sikanderpur	M
247.	”	Sikrera	OC, PG, G, BS, SK, M
248.	”	Sikri	PG, GW, SK, M
249.	”	Suaheri	M
250.	”	Tahdera	SK
251.	”	Thana Bhawan (on Krishni)	LH
252.	”	Tiparpur	PG, M
253.	”	Tughlaqpur	M
254.	”	Un	LH
	Saharanpur		
255.	”	Aghiana	OC
256.	”	Ahir	PG
257.	”	Ahmadpur Grant	EH, M ✓
258.	”	Ajmeripur	SK, M ✓
259.	”	Akbarpur	M
260.	”	Akbarpur	M
261.	”	Alampur	PG
262.	”	Alipura	LH, OC
263.	”	Alwalpur	M
264.	”	Ambkheri-I	PG, GW, SK
265.	”	Ambkheri-II	OC, washed GW
266.	”	Aneki I	SK, M

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Saharanpur		
267.	”	Aneki II	M
268.	”	Aneki III	SK, M
269.	”	Aneki IV	SK, M
270.	”	Aneki V	OC, SK
271.	”	Aneki VI	M
272.	”	Anwarpur-Baraoli	OC, SK, M
273.	”	Asaf-Nagar-Dandi	M
274.	”	Asanwali	LH, OC
275.	”	Asawala	PG
276.	”	Atmalpur	M
277.	”	Aurangabad	G, M
278.	”	Bahera Khurd	LH, OC
279.	”	Bahupur	?
280.	”	Bakarka	OC
281.	”	Barampur	SK
282.	”	Bargaon	LH
283.	”	Basera	M
284.	”	Baundki	LH, OC
285.	”	Bazidpur Majra	LH, OC
286.	”	Bhabri	LH, OC
287.	”	Bhankror	SK, M
288.	”	Bharapur-Bhauri I	M
289.	”	Bharapur-Bhauri II	M
290.	”	Bhedeki (Mustahkaur) Dhamola	LH, OC
291.	”	Bholni	OC, SK, M
292.	”	Bilaspur	PG

(Contd....)

S.No.	District	Village / Site	Cultural Assemblage
	Saharanpur		
293.	"	Bishanpur	Grey ware of EH
294.	"	Bodaheri I	M
295.	"	Bodaheri II	SK
296.	"	Budha-Khera	OC (?), PG, NBP, SK, M
297.	"	Budhi-Mata	M
298.	"	Chandiana Koli (Deoband)	LH, NBP, SK
299.	"	Chauli (Sahbuddinpur)	NBP, SK, M
300.	"	Chhajpura	LH, OC
301.	"	Chhapar (Sherafganpur)	SK
302.	"	Chhaparheri	LH, OC
303.	"	Chilehra	LH, OC
304.	"	Chouradeo	LH, OC, PG
305.	"	Chudiala	SK
306.	"	Chunehti Shekh	LH, OC
307.	"	Chunethi-Gara	LH, OC
308.	"	Dalheri	LH
309.	"	Dandauli	SK, M
310.	"	Daryapur Dayalpur (Roorkee)	M
311.	"	Daulatpur	M
312.	"	Dhaba	M
313.	"	Dudhi	M
314.	"	Dudli Bukhara (Mustahkan)	OC
315.	"	Dugchari	LH
316.	"	Faizabad	M
317.	"	Farukhpur	EH
318.	"	Fatehpur	M

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Saharanpur		
319.	”	Fathepur Gujar	LH, OC
320.	”	Fathepur Jat	LH, OC
321.	”	Gadharona	OC, washed GW
322.	”	Garh (Qutubpur)	OC, M
323.	”	Ghana Khandi	LH, OC
324.	”	Ghathera	OC
325.	”	Ghiana	PG, SK
326.	”	Ghosipura	M
327.	”	Gopali	M
328.	”	Guramb	M
329.	”	Hakimpur Tahra	NBP, SK, M
330.	”	Halwana Ahatmal	PG
331.	”	Haraura	M
332.	”	Hardakheri	OC
333.	”	Haribas (Tahsil Saharanpur)	LH, OC
334.	”	Haripur	M
335.	”	Harojauli Jat	M
336.	”	Hathauli	M
337.	”	Hetampur	OC, SK, M
338.	”	Hulas	PG, GW, BR, BS, NBP, G, SK, Gupta, M
339.	”	Ibrahimpur I	M
340.	”	Ibrahimpur II	SK, M
341.	”	Indrawali Kalyanpur	SK
342.	”	Isapur	PG
343.	”	Jagjitpur	M

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Saharanpur		
344.	"	Jainer	LH, SK, M
345.	"	Jaitpur-Khurd	M
346.	"	Janipur	OC, SK, M
347.	"	Jarauda Panda	M
348.	"	Jaula Dindauli	M
349.	"	Jorasi	M, inscription of Aurangzeb's Period
350.	"	Jorasi (Roorkee)	PG, NBP, SK, M
351.	"	Kabirpur (Tahsil Saharanpur)	LH, OC
352.	"	Kagwali	SK
353.	"	Kailaspur	LH, OC
354.	"	Kalalhatti	OC
355.	"	Kalbeti	LH
356.	"	Kaulakhedi	PG
357.	"	Kenduki	GW, SK, M
358.	"	Khajnavar	SK, M
359.	"	Khatauli	LH, OC
360.	"	Kheda Jat	LH, OC
361.	"	Khera-Amirpur-Sikandar	M
362.	"	Khera-Ibrahimpur	M
363.	"	Khirka-Zunarkar	SK, M
364.	"	Khurrampur	SK, M
365.	"	Kisanpur Jamalpur	SK
366.	"	Kolkikalan	LH, OC, PG
367.	"	Kota	LH, OC
368.	"	Krishni	LH, OC

(Contd.. .)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Saharanpur		
369.	"	Kurali	PG, GW, 16 Indo-Sassanian Coins, M
370.	"	Lahboli	LH, SK, M
371.	"	Lakhmanti Kalan	LH, OC
372.	"	Latifpur	PG
373.	"	Lawa	SK
374.	"	Lodipur	NBP, SK, M
375.	"	Maganpur	M
376.	"	Maheshpur	PG
377.	"	Mahipura	OC
378.	"	Majhadpur	SK (?)
379.	"	Mandla	OC, PG
380.	"	Mandowala	OC (?), NBP, SK, M
381.	"	Marghubpur-Didaheri	M
382.	"	Mathana	LH, OC
383.	"	Matki-Jharauli	LH, OC
384.	"	Mayapur	OC, SK, M
385.	"	Miragpur	PG
386.	"	Mirpur	OC
387.	"	Mohiuddinpur	LH, OC, M
388.	"	Mughrubpur	M
389.	"	Muhammadpur Jat	SK
390.	"	Mustahkam	PG
391.	"	Muzaffarabad	SK, M
392.	"	Naglajhanda	M
393.	"	Nalhera Anantpur	PG

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Saharanpur		
394.	"	Nalhera Bakal	LH, OC
395.	"	Nanauli	LH (?), M
396.	"	Narson Khurd	SK
397.	"	Nasirpur	OC, M
398.	"	Nasirpur Kalan (*alias* Jabrian)	EH
399.	"	Naushara	M
400.	"	Nawada	M
401.	"	Newabas	LH
402.	"	Nirpalpur	LH
403.	"	Pajrana	SK, M
404.	"	Papreki	OC
405.	"	Pathori	OC
406.	"	Patlokar	SK, M
407.	"	Pherupur	EH
408.	"	Piki	LH, OC
409.	"	Pilakhni	LH
410.	"	Pinjaura	LH, OC
411.	"	Piran-Kaliar	M
412.	"	Ponwarka	PG
413.	"	Pujna	PG
414.	"	Puranpur	OC, PG, G, M
415.	"	Qasimpur-Jund (Kankhal)	M
416.	"	Raipur	NBP, M
417.	"	Rajupur	Coarse Grey, M
418.	"	Ramkhera	EH
419.	"	Rangel	OC

(Contd....)

S.No.	*District*	*Village/Site*	*Cultural Assemblage*
	Saharanpur		
420.	"	Ranipur	M
421.	"	Rankhandi	PG
422.	"	Ransura	M
423.	"	Raoli Hazara	M
424.	"	Rasulpur (near Fatehpur rest-house)	PG
425.	"	Ratnakheri	LH
426.	"	Raulpur	OC
427.	"	Reri Malakpur	LH, OC
428.	"	Rohalki	M
429.	"	Sabdalpur	OC
430.	"	Sadhauli	PG
431.	"	Salarpura	LH
432.	"	Salempur	M
433.	"	Salempur Mahdud	OC, SK, M
434.	"	Salempur-Bhokri	OC, PG
435.	"	Saliar Salehpur	M
436.	"	Samthar Shahr	M
437.	"	Sansarpur	M
438.	"	Saragthal	Grey ware of EH
439.	"	Sarkari Kumar	LH, OC
440.	"	Sarkari Shekh	LH, OC
441.	"	Sarsawa 16 km from Saharanpur-Ambala road	PG
442.	"	Sarsena	NBP, SK
443.	"	Sartha-Kursi	M

(Contd....)

S.No.	*District*	*Village / Site*	*Cultural Assemblage*
	Saharanpur		
444.	”	Sarurpur	OC
445.	”	Sati Kund	OC, SK
446.	”	Shakarpur Road	PG
447.	”	Shekupur	M
448.	”	Sherpur Gujar	LH, OC
449.	”	Shikarpur	OC, washed GW
450.	”	Shukartal	OC
451.	”	Sikandarpur	M
452.	”	Sikandarpur Bhainswal	M
453.	”	Sona	OC, SK, M
454.	”	Subhri Khwaja	LH, OC
455.	”	Suneheti Mustahkam	SK
456.	”	Taga	OC
457.	”	Taharpur	M
458.	”	Talehpur	M
459.	”	Tanda	M
460.	”	Taoda Kalianpur	M
461.	”	Tatarpur-Kalan	LH
462.	”	Tauli	OC, M
463.	”	Teliwala	OC, G
464.	”	Thamnamajra	PG
465.	”	Thataula	OC, PG, washed Grey, M
466.	”	Tigri	SK
467.	”	Tikaula Sadatpur	SK
468.	”	Tikrol	LH
469.	”	Unchagaon	GW, SK, M

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PLATES

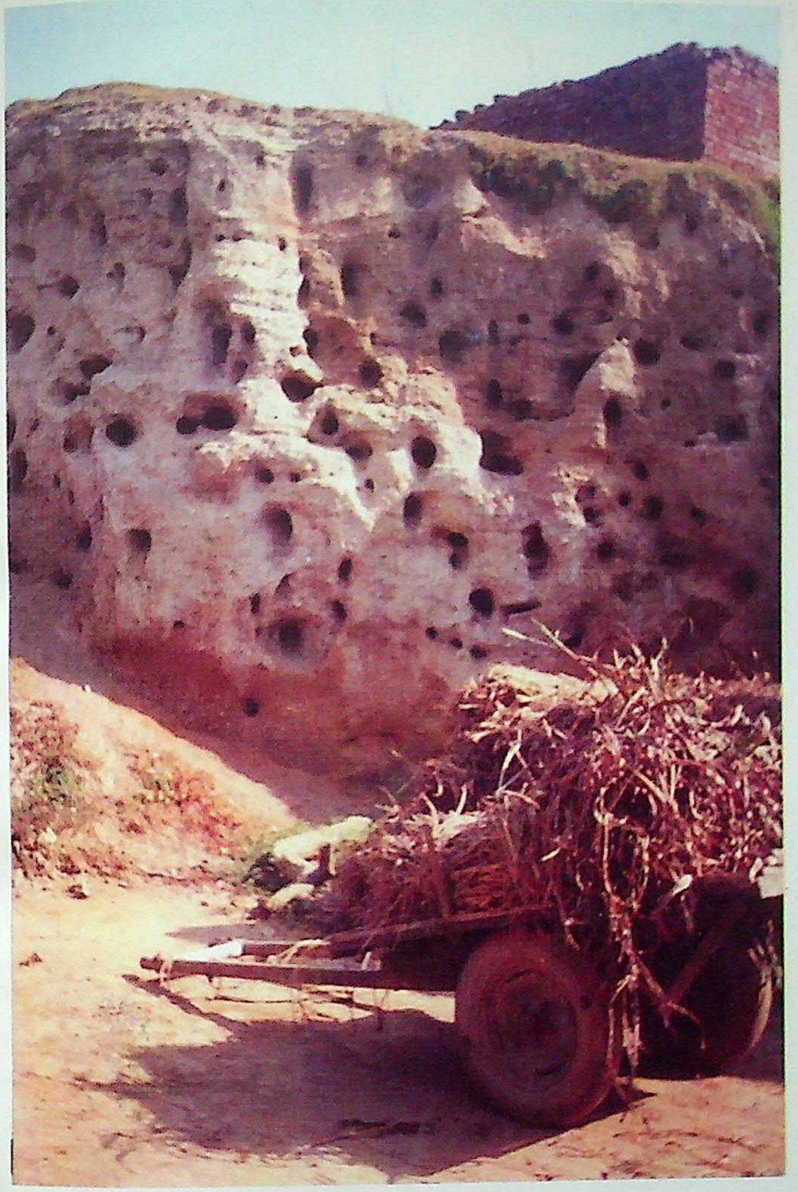

Plate I. Profile of the mound of Khurd Banhera

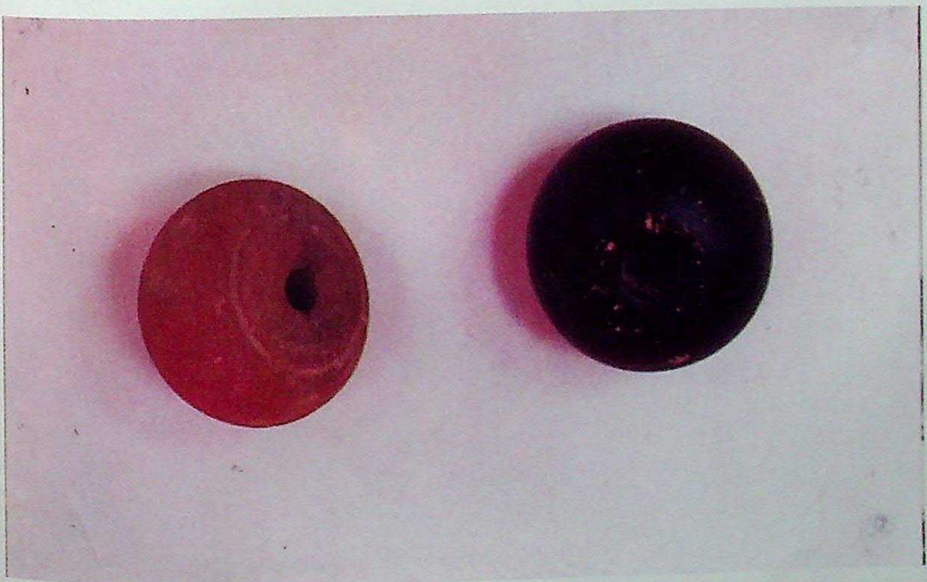

Plate II. Beads of terracotta and black jasper from Siti

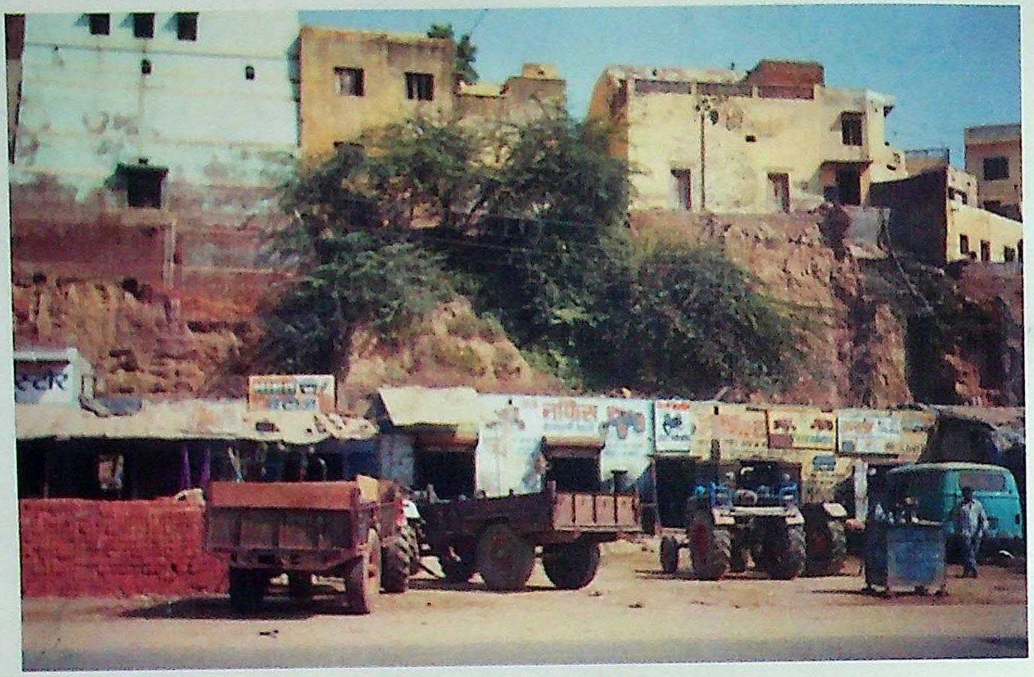

Plate III. Profile of the mound of Loni

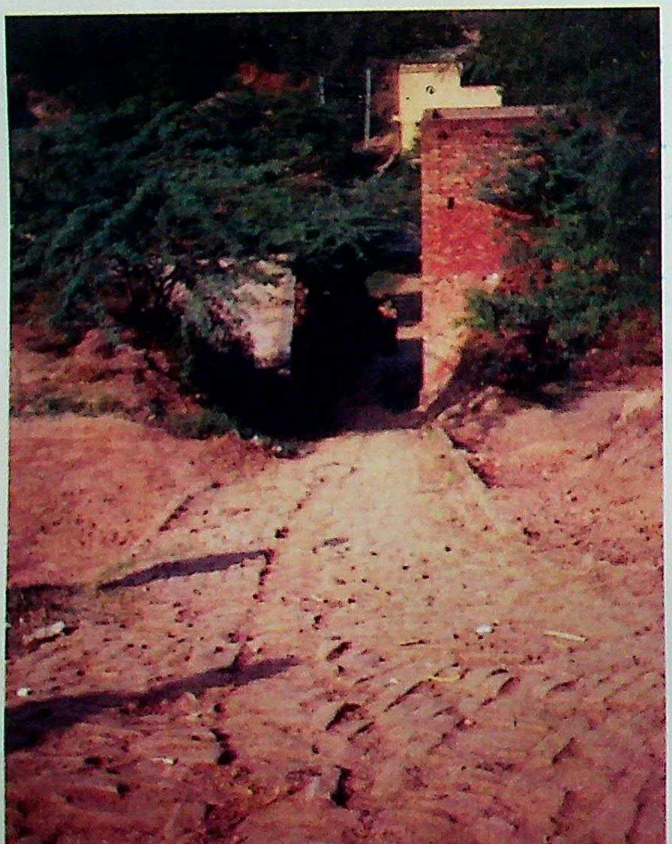

Plate IV. The Steep ascent of the Mukari village mound

Plate V. An exposed section of the Mukari village mound

Plate VI. Profile of the Mukari *Pir* mound and neighbouring agricultural land

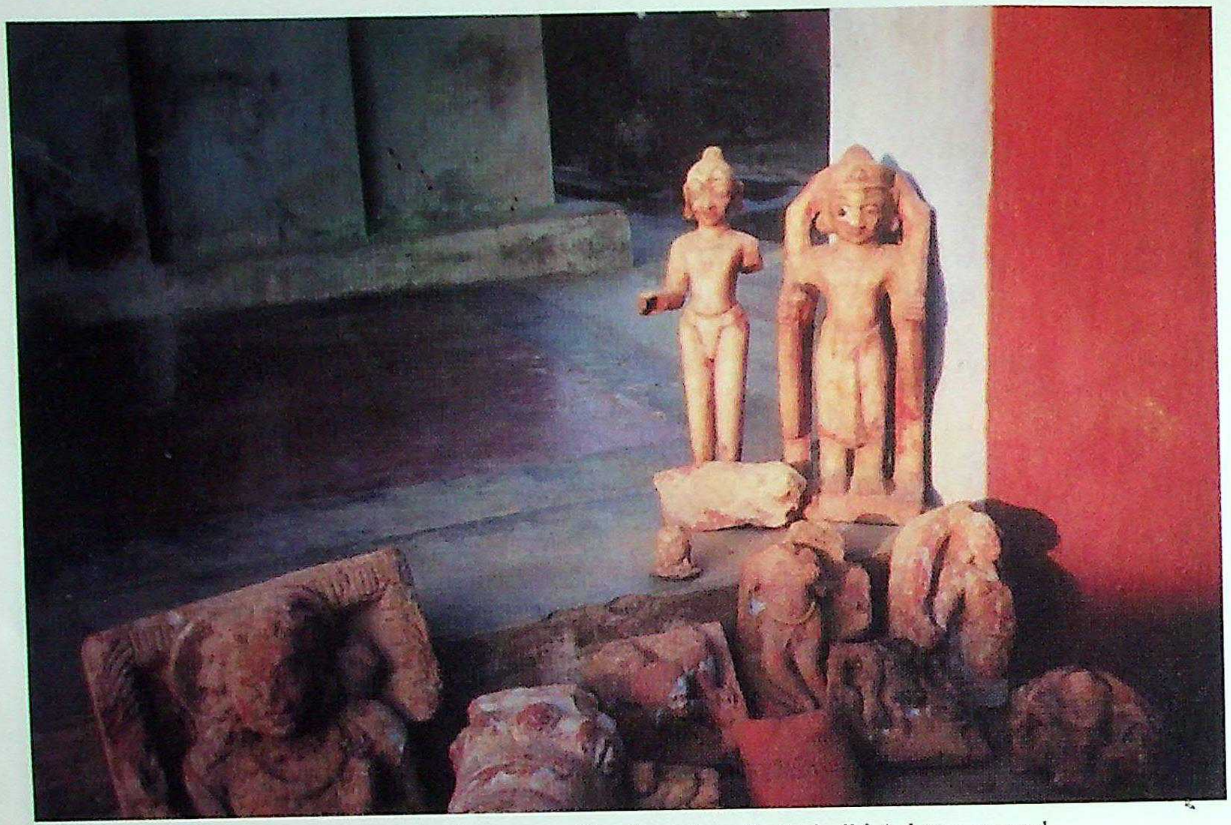

Plate VII. Statues and terracotta figurines from the Valmiki Ashram mound

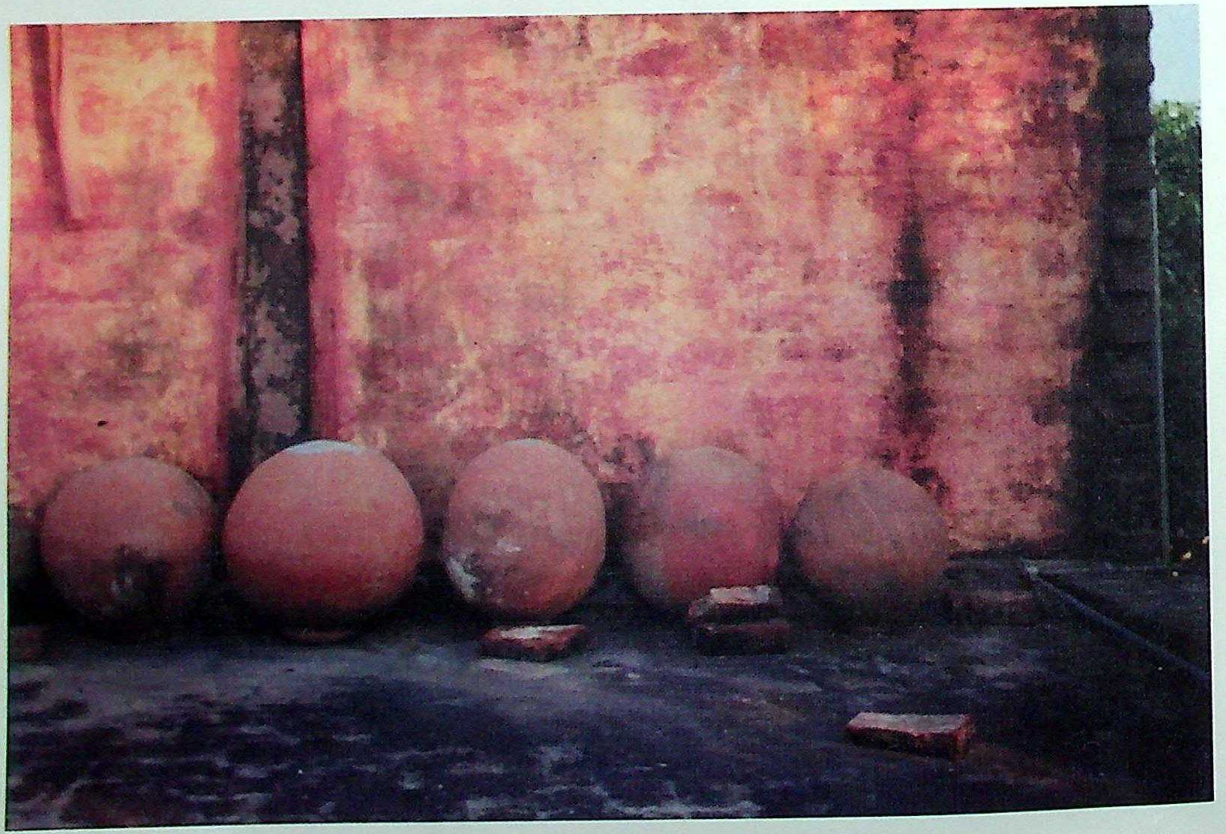

Plate VIII. Unbroken pots and few birck pieces af ancient period from the Valmiki Ashram mound

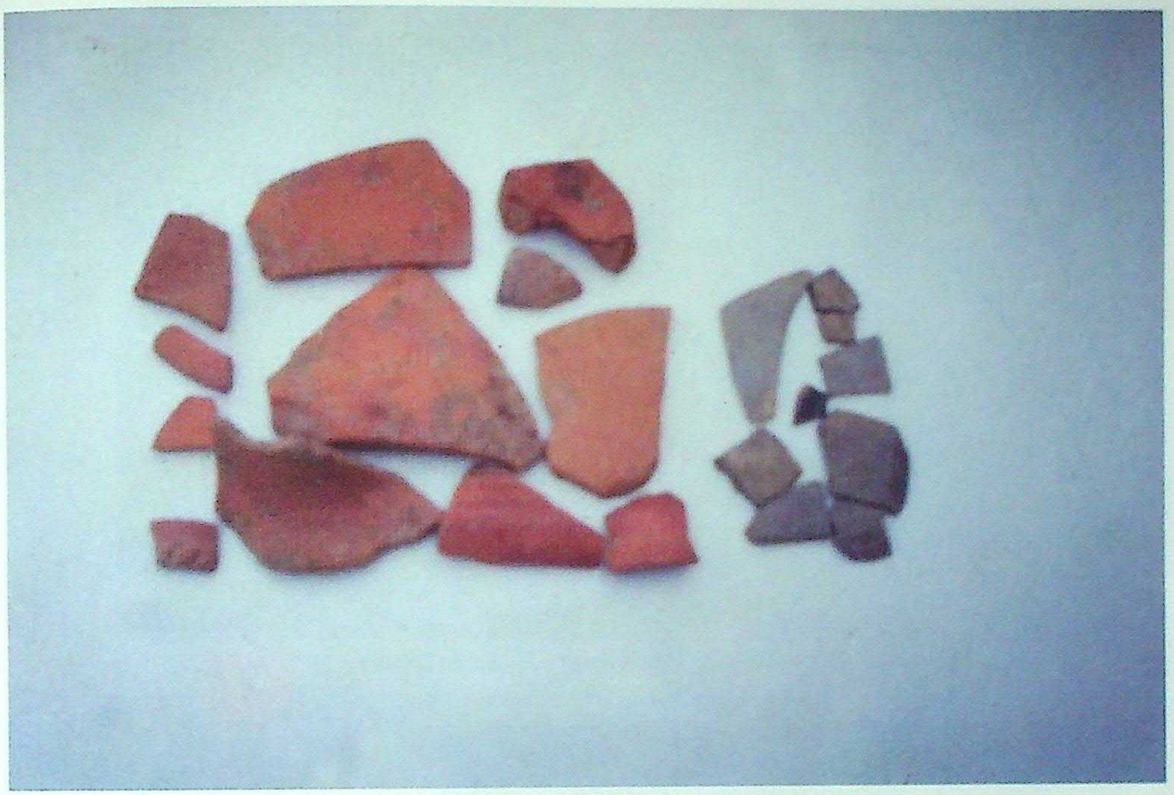

Plate IX. Potsherds from the Pashuram ka khera mound

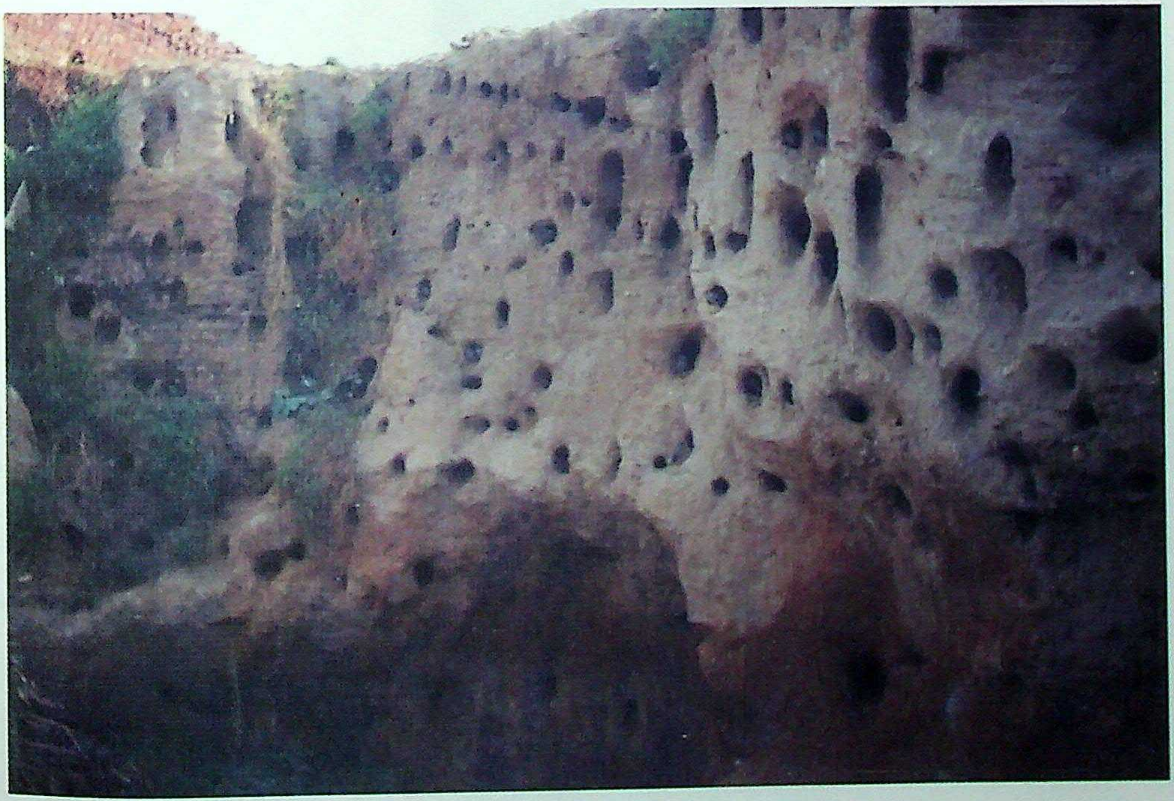

Plate X. An exposed section of the Katha mound

Plate XI. Bones from the Katha mound

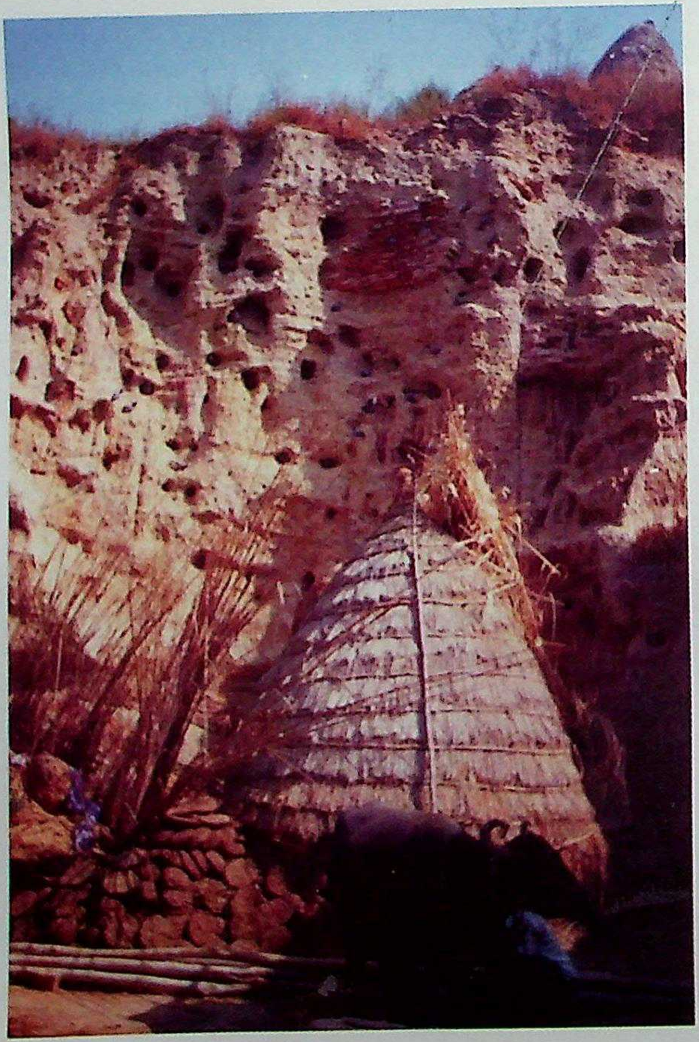

Plate XII. An exposed section of the Mandaula mound

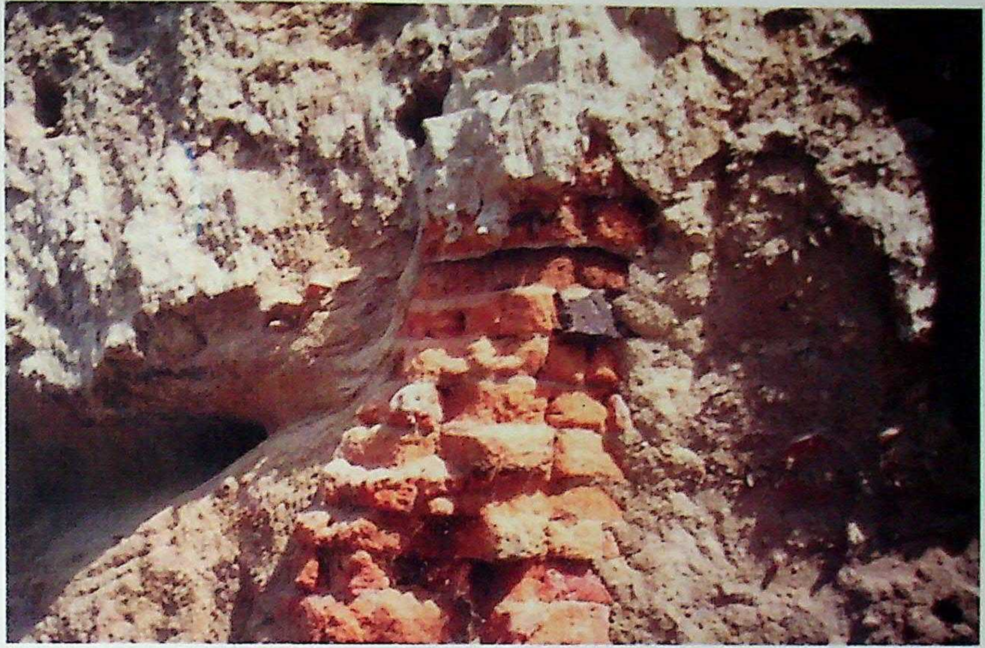

Plate XIII A. Bricks of the wall at the lowest level of the exposed Mandaula mound

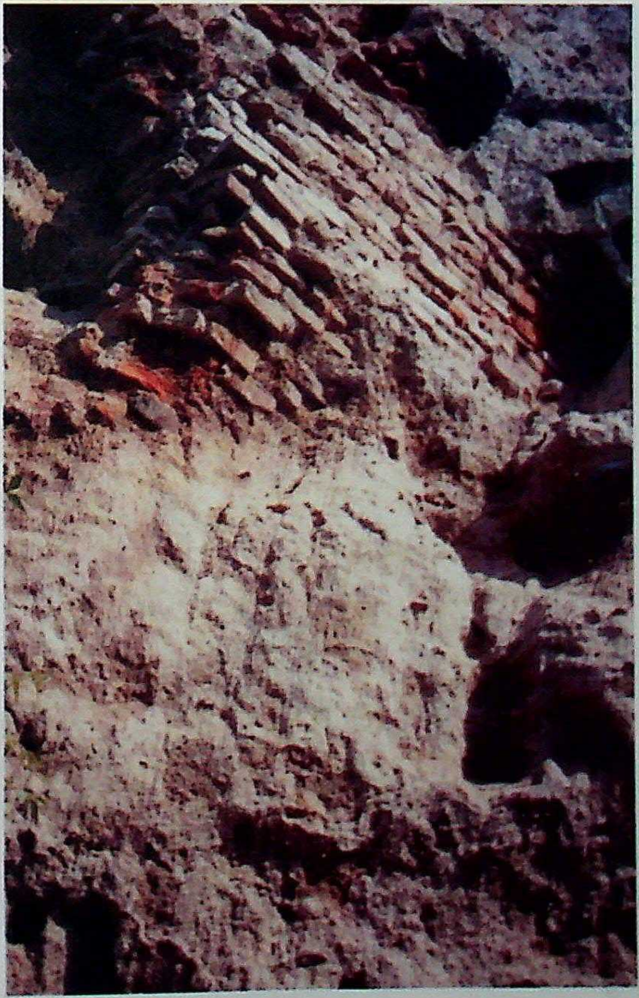

Plate XIII B. Bricks of the wall at the middle level of the exposed Mandaula mound

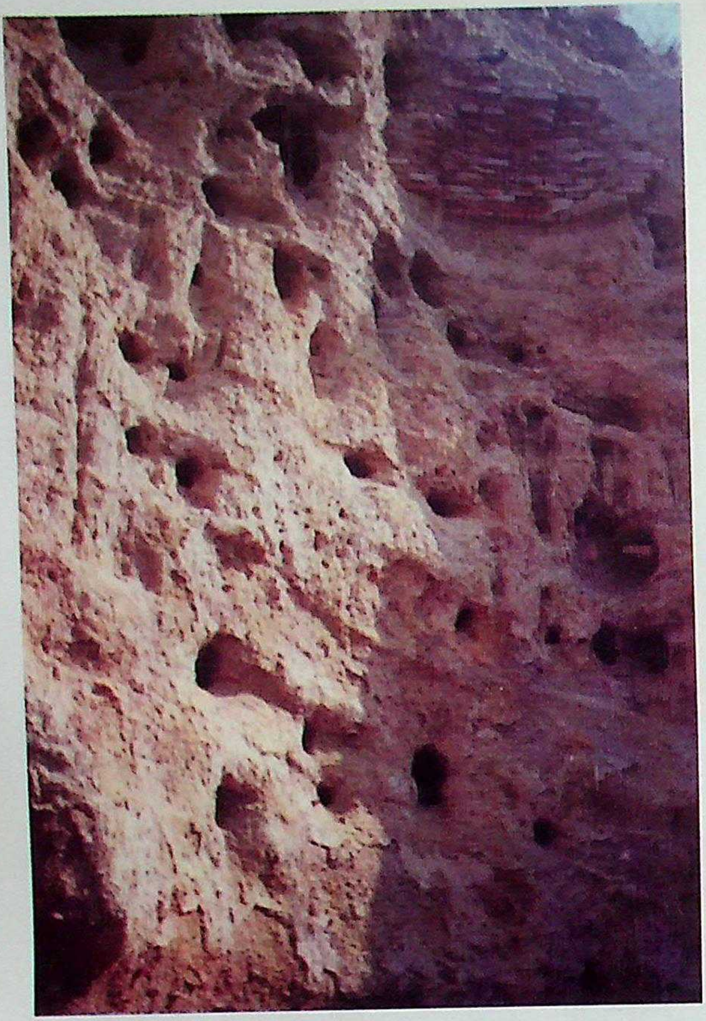

Plate XIII C. Bricks of the wall at the top level of the exposed Mandaula mound

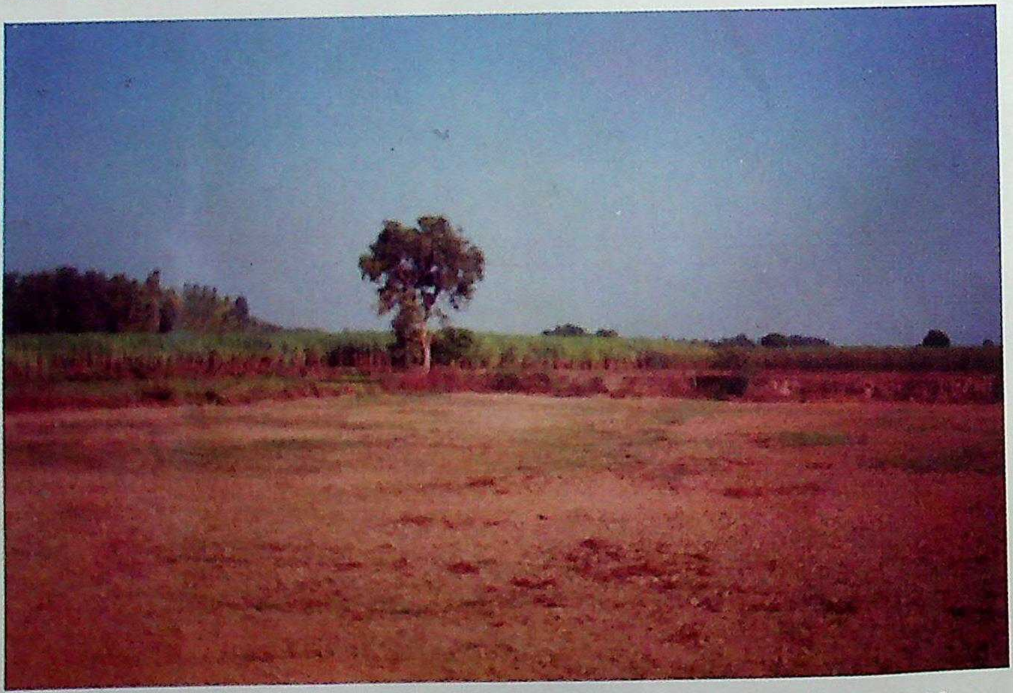

Plate XIV. The Baragaon mound now converted into an agricultural field

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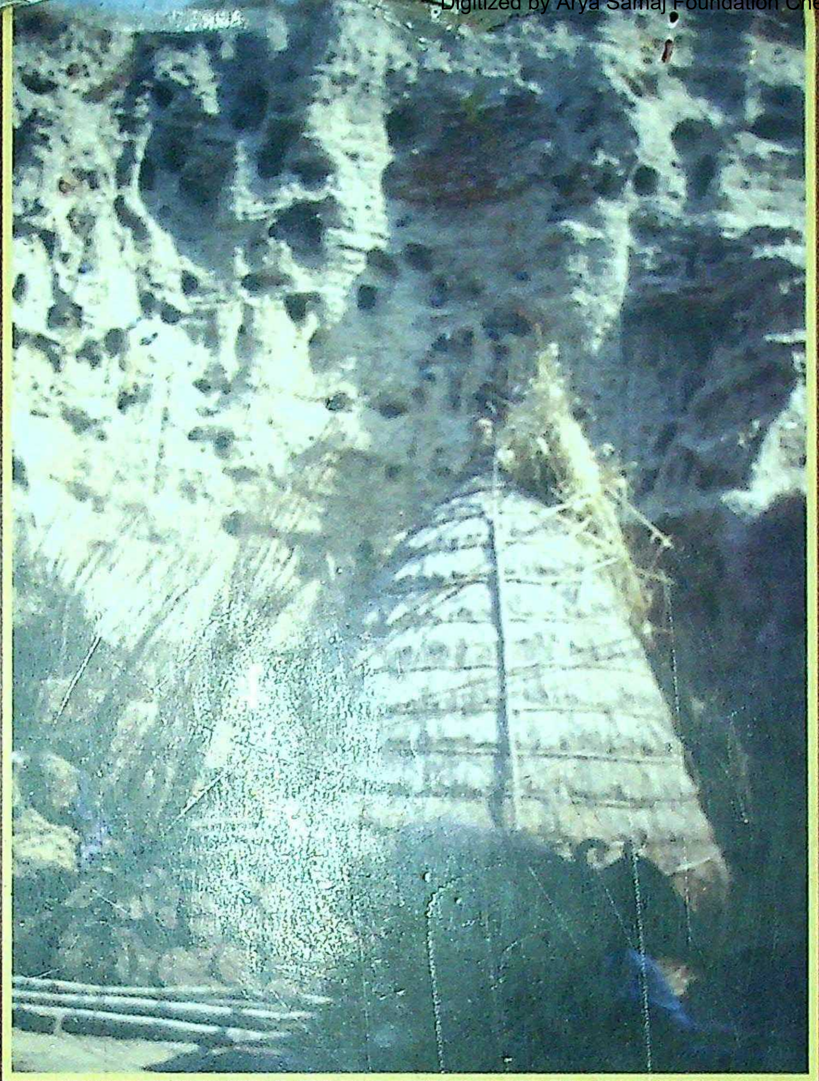

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